
National Child Measurement Programme: *2006/07 school year, headline results*



Foreword by Tim Straughan
Chief Executive
The Information Centre for health and social care



The Information Centre for health and social care (The IC) is a special health authority which provides authoritative, comparative data and an independent perspective on the quality, validity and application of information to support improvement in health and social care.

It is with great excitement that we present this report, which provides the first reliable, local-level assessment of childhood obesity in England from the National Child Measurement Programme (NCMP) for 2006/07. The level of coverage in terms of the proportion of eligible children who have been measured represents a vast improvement on the previous year's programme, leading to much greater confidence in the findings. This is largely thanks to the great efforts of staff in Primary Care Trusts and schools, and we thank all involved for their continued support and cooperation.

We are acutely aware of the importance of the Government's agenda to tackle excess weight among children, and hope this report goes some way to informing and shaping policy. The IC welcomes the opportunity to have led on the 2006/07 central data collection and analysis exercise and very much looks forward to leading on the corresponding exercise for 2007/08.

Tim Straughan
Chief Executive

Contents

	Page
Summary	3
Introduction	5
Methodology.....	7
Results	9
Participation.....	9
The effect of participation rates on prevalence	12
Height, weight and BMI distributions	13
Prevalence of obese and overweight children: national findings	16
Prevalence of obese and overweight children by Strategic Health Authority (SHA)	19
Prevalence of overweight and obese children by PCT	22
Prevalence of obese and overweight children by deprivation (Index of Multiple Deprivation)	25
Prevalence of obese and overweight children by deprivation (percentage of children eligible for free school meals)	26
Prevalence of obese and overweight children by ethnicity	28
Prevalence of obese and overweight children by rural/urban classification.....	31
Comparison of results from the 2006/07 NCMP with the Health Survey for England 2006	34

Summary

- This report summarises the key findings from the Government's National Child Measurement Programme (NCMP). The report provides high-level analysis of the prevalence of "obese" and "overweight"¹ children, in Reception (aged 4–5 years) and Year 6 (aged 10–11 years), measured in the school year 2006/07.
- In total, 876,416 valid measurements were received for children, in England, in Reception and Year 6 – approximately 80% of those eligible². This represents an increased participation rate of 32 percentage points from last year's programme, when the corresponding rate was 48%.
- This report outlines the prevalence of obese and overweight children by year and sex in England for 2006/07, as summarised in table 1:

Table 1: Prevalence of obese and overweight children by year and sex, England, 2006/07

		Overweight but not obese	Obese	Overweight and obese combined	Number measured
Year R	Boys	13.6%	10.7%	24.3%	223,361
	Girls	12.4%	9.0%	21.5%	212,566
	Both	13.0%	9.9%	22.9%	435,927
Year 6	Boys	14.2%	19.0%	33.2%	227,984
	Girls	14.1%	15.8%	30.0%	212,505
	Both	14.2%	17.5%	31.6%	440,489

- In summary, the key findings are that:
 - In Reception, almost one in four of the children measured was either overweight or obese. In Year 6, this rate was nearly one in three;
 - The prevalence of obesity is significantly higher in boys than in girls in both age groups³;
 - The prevalence of obesity is significantly higher in Year 6 than in Reception³;
 - The percentage of children who are overweight is only slightly higher in Year 6 than in Reception;
 - The percentage of children who are overweight is similar for boys and girls in year 6: in Reception, this rate is slightly higher for boys than for girls³.
- Obesity prevalence is significantly higher than the national average in the North East, West Midlands and London SHAs for both school years.
- Obesity prevalence is significantly below the national average in the South East Coast, South Central, South West and East of England SHAs for children in both school years, as well as for Year 6 children in the East Midlands SHA.
- Obesity prevalence is higher in urban areas than in rural areas.

- There is a strong positive relationship between deprivation and obesity prevalence for children in Reception and Year 6.
- When interpreting the results, it is important to consider the possible effects of participation rate on prevalence rates. Since the participation rate was less than 100%, data will be missing for certain children. If these missing data were atypical, results could be biased. For example, if children with higher BMI scores opted out of being measured, overweight and obese prevalence would be underestimated. Analysis later in the report shows that Year 6 prevalence of obese and overweight may be slightly underestimated but that results for Reception children are likely to be more robust.

1. Introduction

- 1.1. Established in 2005, the National Child Measurement Programme (NCMP)^{4,5} weighs and measures children in Reception (typically aged 4–5 years) and Year 6 (aged 10–11 years). The findings are used to inform local planning and delivery of services for children and gather population-level surveillance data to allow analysis of trends in excess weight. The programme also seeks to raise awareness of the importance of healthy weight in children. The NCMP is part of the government's strategy to tackle the continuing rise in excess weight.
- 1.2. In September 2007, the government announced a new ambition: *to reverse the rising tide of obesity and overweight in the population, by ensuring that all individuals are able to maintain a healthy weight*. The government's initial focus is on children, and by 2020 they aim: *to have reduced the proportion of overweight and obese children to 2000 levels*. The government set out its strategy on excess weight in *Healthy Weight, Healthy Lives: A Cross-Government Strategy for England*, published in January 2008.
- 1.3. The Department of Health (DH) is responsible for overall policy on obesity and is jointly responsible with the Department for Children, Schools and Families (DCSF) for policy on child obesity. Although the ambition covers a period of 12 years, progress over the period 2008–11 will be monitored through the inclusion of child obesity (as shown by NCMP data) as one of the indicators in the child health Public Service Agreement (PSA).
- 1.4. This report analyses data collected in 2006/07, the second year of national child measurements. Central collection and analysis of the NCMP data is coordinated by the Information Centre for health and social care (the IC), and data are supplied locally by Primary Care Trusts (PCTs) with the support and cooperation of schools.
- 1.5. This report presents the headline findings for the 2006/07 NCMP and paves the way for further detailed secondary analysis. Other organisations, for example NHS Public Health Observatories, will produce such detailed analysis in due course.
- 1.6. Experience gained in 2005/06 (the first year of the programme) informed many improvements for 2006/07 that have enabled:
 - improved participation rates leading to more accurate prevalence estimates;
 - increased efficiency in data collection and validation; and
 - the collection of more detailed information centrally.
- 1.7. Comparisons of the 2005/06 and 2006/07 results have not been made in this report, because the increase in participation rates between the two years might skew comparisons. The participation rate was 48% in 2005/06 and 80% in 2006/07. Therefore, in 2005/06, considerably

more data were missing than in 2006/07. If these missing data from either year were atypical, results could be biased. For example, if the 2005/06 NCMP database was missing a disproportionate amount of data from obese children, prevalence of obesity would be underestimated. This underestimation would skew any comparison with 2006/07 prevalence.

- 1.8. Time-series analysis should be possible in future years when participation rates have stabilised and changes in prevalence due to changes in participation rate can be discounted. Investigation into the relationship between participation rate and prevalence can be found in section 3.2.

2. Methodology

Data collection and validation

- 2.1. Measurement of children's heights and weights, without shoes and coats and in normal, light, indoor clothing, was overseen by healthcare professionals and undertaken in school by trained staff. PCT staff entered these data into specially designed spreadsheets: the NCMP data-capture tool. Measurements could be taken at any time during the 2006/07 academic year. Consequently, some children were almost two years older than others in the same school year at the point of measurement.
- 2.2. The data-capture tool was designed to do a range of automated validation checks to ensure dataset quality. Annex 3 contains the full list, but two important validation checks are explained here:
- Each entered variable had to meet certain required conditions. For example, the height and weight were checked for extreme values. Records that were outside the expected range were flagged for correction or comment (if the measurement was confirmed to be valid) before the data could be uploaded;
 - Overall dataset checks were run. For example, the percentage of duplicate records was calculated and provided to the PCT as part of a summary report. This highlighted if there were any areas of concern for the PCT to check before uploading the data.
- 2.3. Once the data had been uploaded to the IC, further validation checks were made, the data set was cleaned (annex 4) and PCTs' participation rates were assessed (annex 6). As discussed above, low participation rates may bias prevalence if the "missing" data are atypical (section 3.2).

Definitions of healthy weight, overweight and obese

- 2.4. Prevalence rates were calculated by deriving every child's BMI⁶ and referencing the age and sex-specific UK National BMI percentiles classification to count the number of children defined as overweight or obese.
- 2.5. BMI was calculated in accordance with NICE guidelines⁷. The following thresholds for defining healthy weight, overweight and obese children were then used:
- **Healthy weight** is defined as having BMI lower than the 85th percentile;
 - **Overweight** is defined as having BMI greater than or equal to the 85th percentile but less than the 95th percentile (i.e. overweight *but not* obese); and
 - **Obese** is defined as having BMI greater than the 95th percentile;

- “Underweight” was not examined, since no accepted underweight BMI threshold has been published for the UK National BMI percentile classification.

Participation

- 2.6. Pupils eligible for inclusion in the NCMP were all children in Reception and Year 6 attending non-specialist maintained state schools in England⁸.
- 2.7. Numbers of pupils at each school were provided by DCSF, but PCTs could edit these figures if necessary. The PCT could also add or remove schools from their geographically assigned list if, despite being within their PCT boundary, another PCT had undertaken measurement in that school. PCT changes to DCSF pupil numbers and schools were validated by the IC to ensure accuracy.
- 2.8. The participation rate is the proportion of eligible pupils who were measured (annex 6). Participation rates are estimates and should be treated with caution, particularly at smaller geographical areas levels, because of the difficulty in calculation of the number of pupils eligible for measurement. For example, in Reception, pupils might join the school throughout the year.
- 2.9. Records were assigned to a PCT, and thereby SHA, based on the PCT that returned the data. Consequently, geographical analyses, showing results by PCT and SHA (and upper-tier Local Authority (LA)), are based on the child’s school rather than their home address. Child’s home postcode was an optional variable for the 2006/07 NCMP.

3. Results

3.1. Participation

3.1.1. The percentage of eligible pupils who were measured is known as the participation rate. For NCMP 2006/07, PCTs were set a participation rate target, for each year, of **80%**. The combined participation rate, across all PCTs, was:

- 83% for Reception (435,927 children measured);
- 78% for Year 6 (440,489 children);
- 80% for Reception and Year 6 combined (876,416 children).

3.1.2. All 152 PCTs provided data for NCMP 2006/07. This represents an improvement on last year's programme, when only 80% of PCTs returned data (243 out of 303 of the former PCTs). Participation rates varied by PCT:

- Over two thirds of PCTs (103) achieved a combined participation rate of over 80%;
- 116 PCTs exceeded the 80% target for Reception;
- 90 PCTs exceeded the 80% target for Year 6;
- Tables A-C in annex 1 show participation rates (by year and combined) at PCT, SHA and LA level.

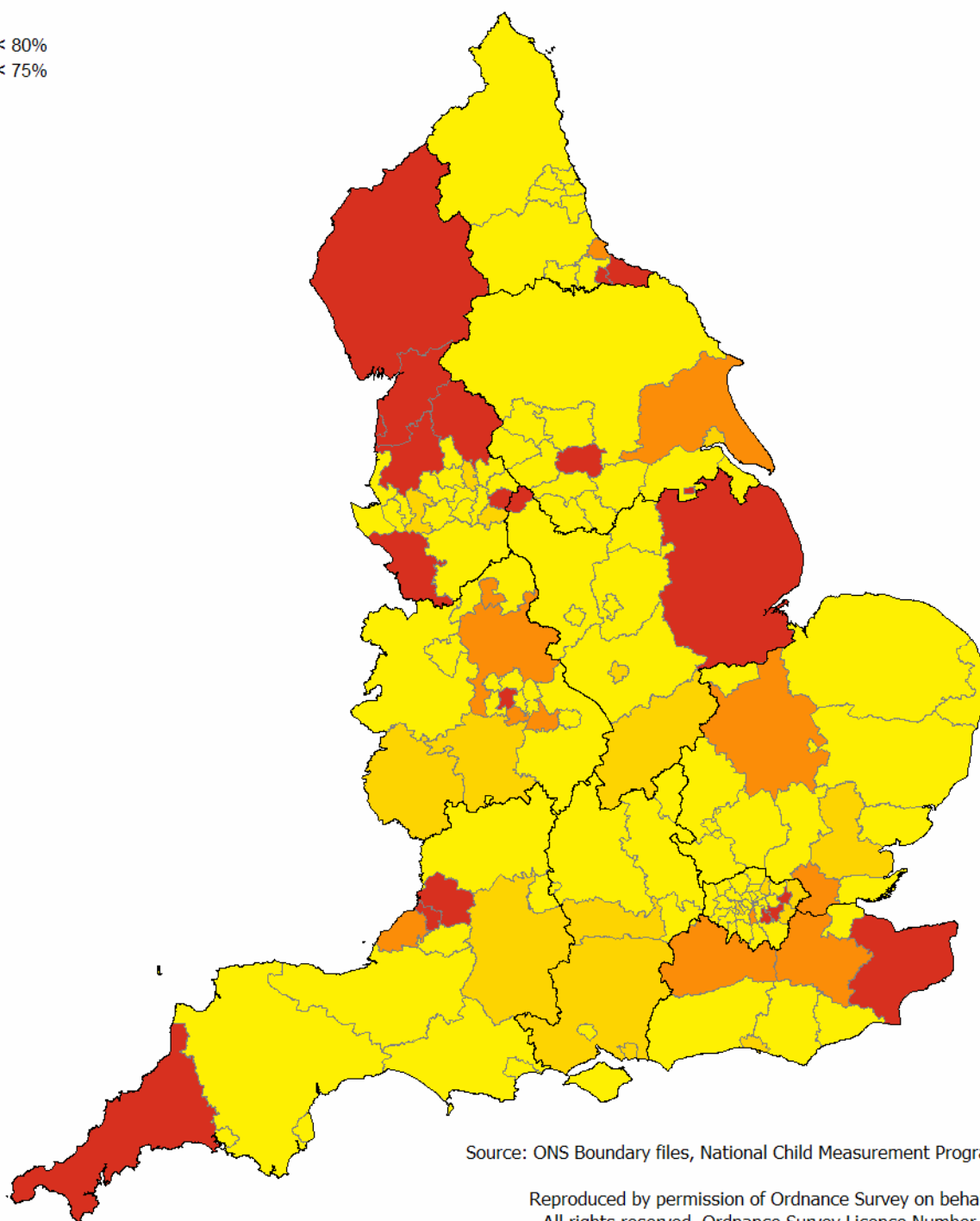
3.1.3. Of the pupils measured, 51% in Reception were boys and 52% in Year 6 were boys. It is not possible to calculate the participation rates by gender since the number of eligible boys and girls was not collected.

3.1.4. Figures 1 and 2 show the overall participation rates by PCT and upper-tier Local Authority (LA) respectively.

Figure 1: Overall participation rate for NCMP 2006/07, by PCT

Response Rate

- $\geq 80\%$
- $\geq 75\% < 80\%$
- $\geq 70\% < 75\%$
- $< 70\%$



Source: ONS Boundary files, National Child Measurement Programme data.

Reproduced by permission of Ordnance Survey on behalf of HMSO.
All rights reserved. Ordnance Survey Licence Number 100044406.

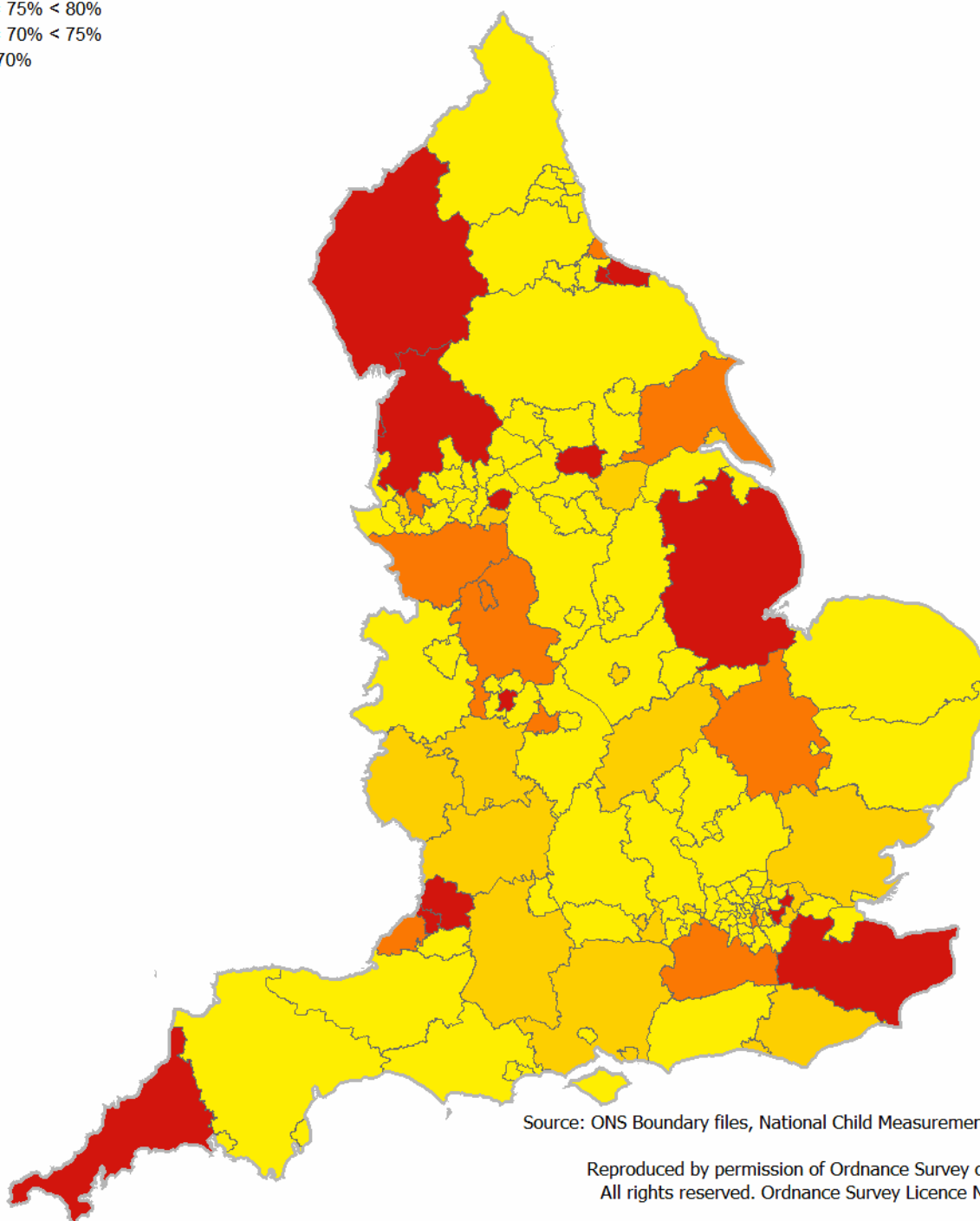
Crown copyright and database right 2008.

© The Information Centre for health and social care

Figure 2: Overall participation rate for NCMP 2006/07, by Local Authority (LA)

ResponseRate

- $\geq 80\%$
- $\geq 75\% < 80\%$
- $\geq 70\% < 75\%$
- $< 70\%$



Source: ONS Boundary files, National Child Measurement Programme data.

Reproduced by permission of Ordnance Survey on behalf of HMSO.
All rights reserved. Ordnance Survey Licence Number 100044406.

Crown copyright and database right 2008.

© The Information Centre for health and social care

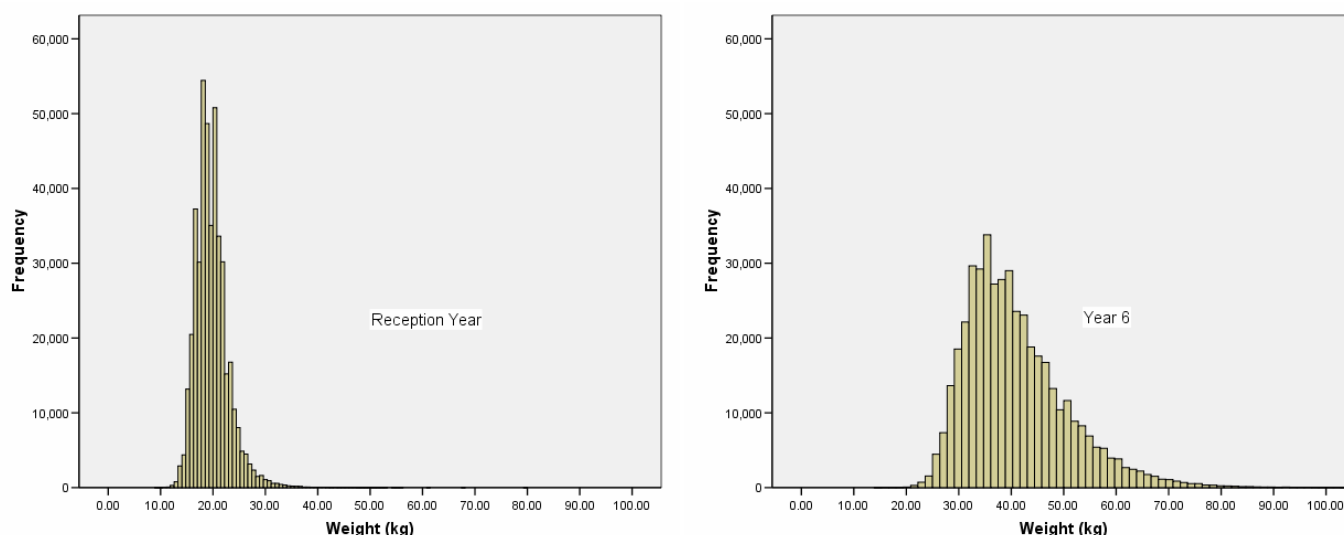
3.2. The effect of participation rates on prevalence

- 3.2.1. For NCMP 2006/07, **80%** of all eligible pupils in Reception and Year 6 combined were measured. It follows that 20% of eligible pupils were not measured. This section investigates whether results could have been biased through not including measurements from these “missing” pupils, and looks at the possible effect of participation rate on the reported prevalence of overweight and obese children.
- 3.2.2. Past analysis has shown that PCTs with lower participation rates tended to have lower levels of prevalence than those with a high participation rate. This would suggest that there might be higher levels of opting out among children with higher BMIs. If such opting out had occurred then we would expect to see a link between participation rate and prevalence: where participation rate was low we would expect prevalence to be underestimated due to the “missing” data from heavier children. As participation rate increases we would expect prevalence to approach its true value, due to the increasing inclusion of data from heavier children.
- 3.2.3. Annex 7 contains regression analysis and concludes that **a lower participation rate may lead to an underestimation of prevalence of overweight / obese children for Year 6.** However, the strength of the relationship between coverage and prevalence is weak, and other confounding factors might exist which have a greater effect on prevalence and which have not been examined. Further work is warranted to investigate the relationship between participation rates and prevalence of overweight and obesity for Year 6.
- 3.2.4. **Participation rate is shown to have little or no effect on prevalence for Reception children.**

3.3. Height, weight and BMI distributions

3.3.1. Figures 3 to 8 show the height, weight and BMI distributions of children, by school year (435,927 in Reception, 440,489 in Year 6), in England, 2006/07.

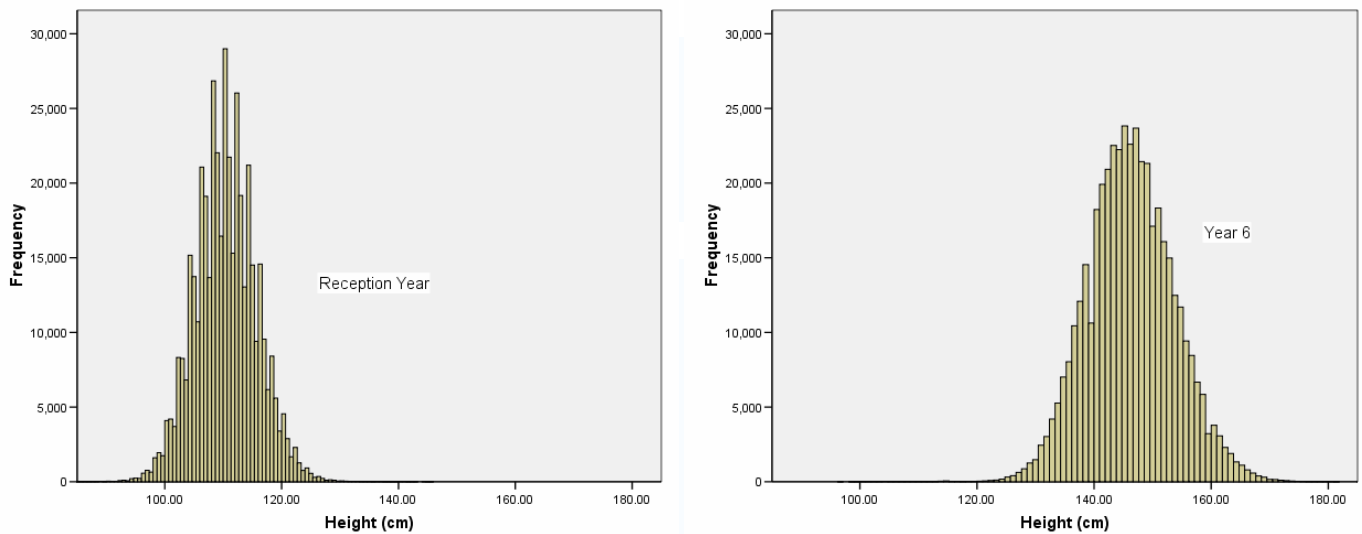
Figures 3 and 4: Weight distributions of children in Reception and Year 6, England, 2006/07



3.3.2. The key findings for the weight distributions are as follows:

- The mean weight for children in Reception is 19.8kg. The mean weight in Year 6 is 40.9kg, more than twice that for Reception.
- Weight is more varied in Year 6 than in Reception. This variation can be assessed visually, by looking at the spread of the distribution, or numerically, through calculating the *coefficient of variation (cv)*⁹. The cv of weight is 0.16 in Reception and 0.24 in Year 6.
- The distributions are not symmetrical. Both distributions are positively skewed, meaning that the right tail is longer than the left. This is due to a greater proportion of children at the higher end of the weight scale. The skew is more pronounced for Year 6.

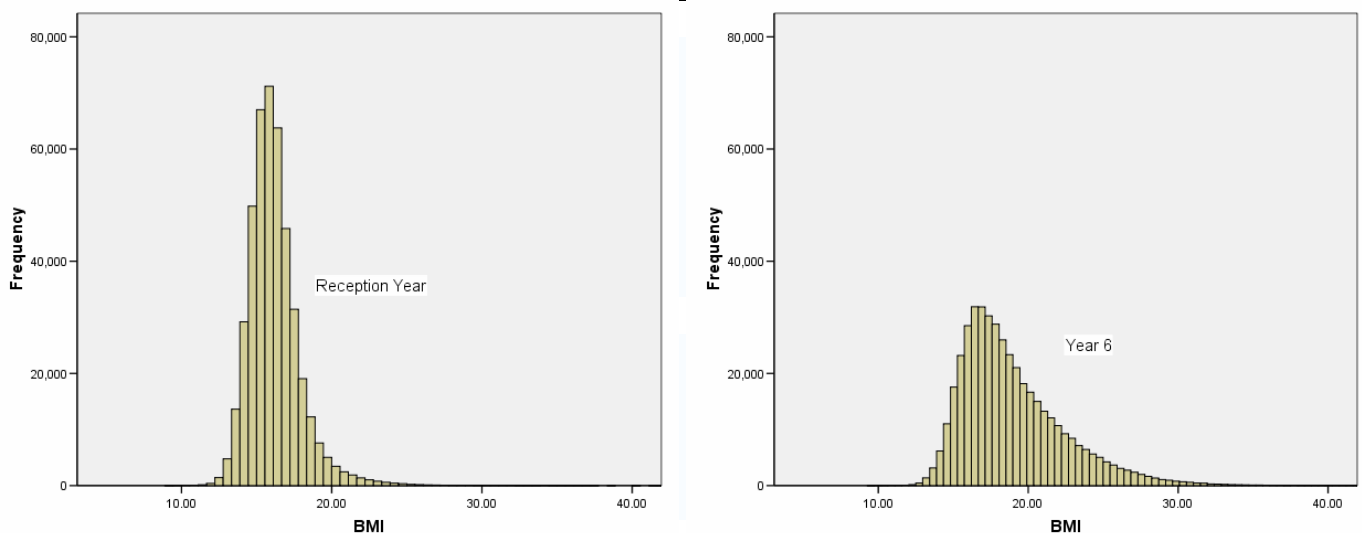
Figures 5 and 6: Height distributions of children in Reception and Year 6, England, 2006/07



3.3.3. The key findings for the height distributions are as follows:

- The mean height is 110.4cm for children in Reception and 146.3cm for children in Year 6;
- Height variation is similar for both year groups: the cv^9 of height is 0.047 in Reception and 0.051 in Year 6.
- Both distributions are symmetrical without the skews that are evident for weight.

Figures 7 and 8: BMI distributions of children in Reception and Year 6, England 2006/07

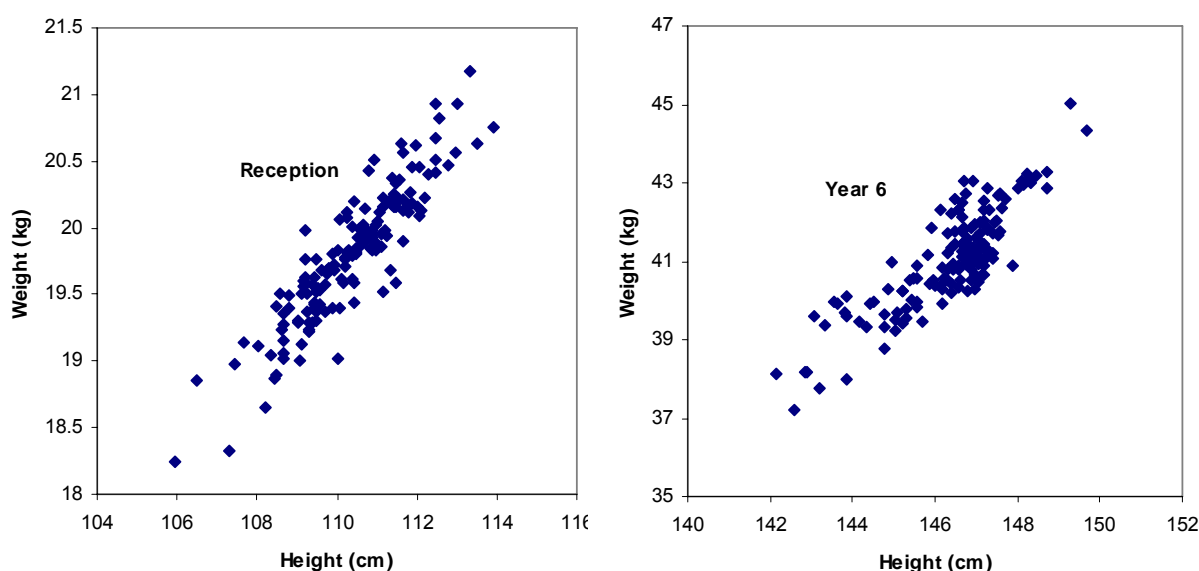


3.3.4. The key findings for the BMI distributions are as follows:

- The mean BMI is 16.2kg/m² and 18.9kg/m² for children in Reception and Year 6 respectively;
- As seen with weight, BMI is more varied in Year 6 than Reception: the cv⁹ of BMI is 0.11 in Reception and 0.18 in Year 6;
- The distributions are not symmetrical. Both distributions are positively skewed, i.e. the right tail is longer than the left, meaning that there are a greater number of children at the higher end of the BMI scale. The skew is more pronounced in Year 6.

3.3.5. Figures 9 and 10 show average PCT weight plotted against height for Reception and Year 6 children respectively.

Figures 9 and 10: Weight vs. height, PCT averages, England, 2006/07



3.3.6. Figures 9 and 10 illustrate the strong positive relationship between PCT average height and weight for both years. It is important to note that PCTs could measure children at any time during the 2006/07 academic year. Consequently, lower averages could be due to PCTs taking measurements earlier in the year, when the children were younger.

3.4. Prevalence of obese and overweight children: national findings

- 3.4.1. Prevalence rates have been calculated by first deriving every child's body-mass index (BMI) and referencing the age and sex-specific UK National BMI percentiles classification to count the number of children defined as overweight or obese¹.
- 3.4.2. Since that the NCMP sample size is so large, the confidence intervals (annex 2) of all of the prevalence estimates in this report are very narrow. Where 95% confidence intervals for prevalence estimates clearly do not overlap, it can be deduced that differences are statistically significant.
- 3.4.3. Tables A-C in annex 1 show overweight, obese and combined prevalence, with associated 95% confidence intervals, by year, at PCT, SHA and LA level.
- 3.4.4. Figures 11 and 12 show the prevalence of obese and overweight children, with associated 95% confidence intervals, by sex, in England, 2006/07.

Figure 11: Prevalence of obese and overweight children in Reception Year, by sex, England, 2006/07

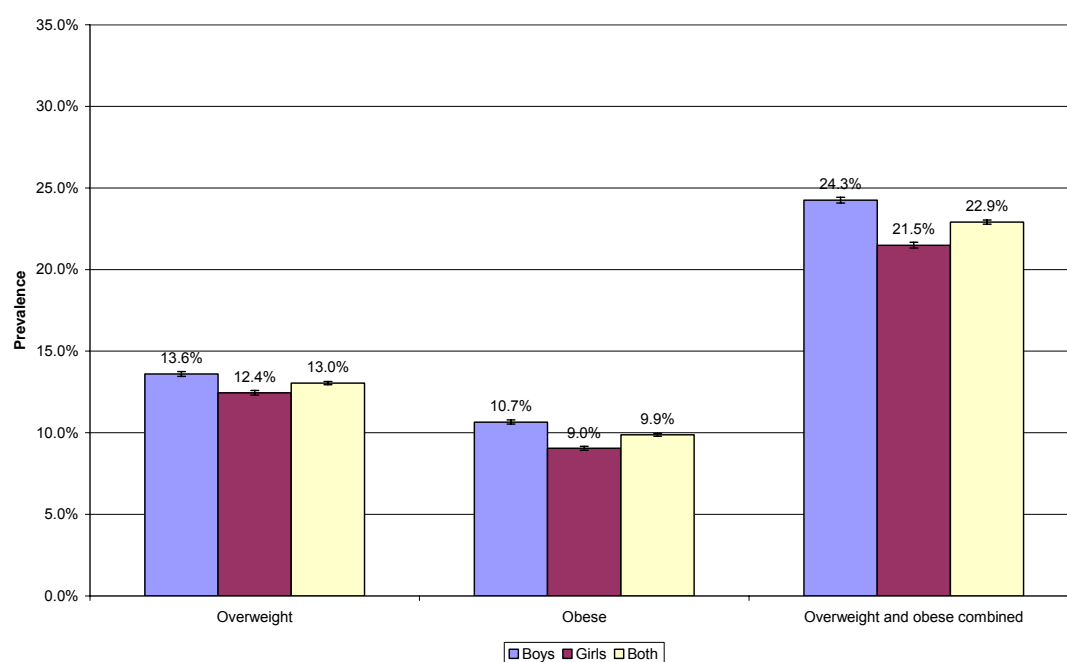
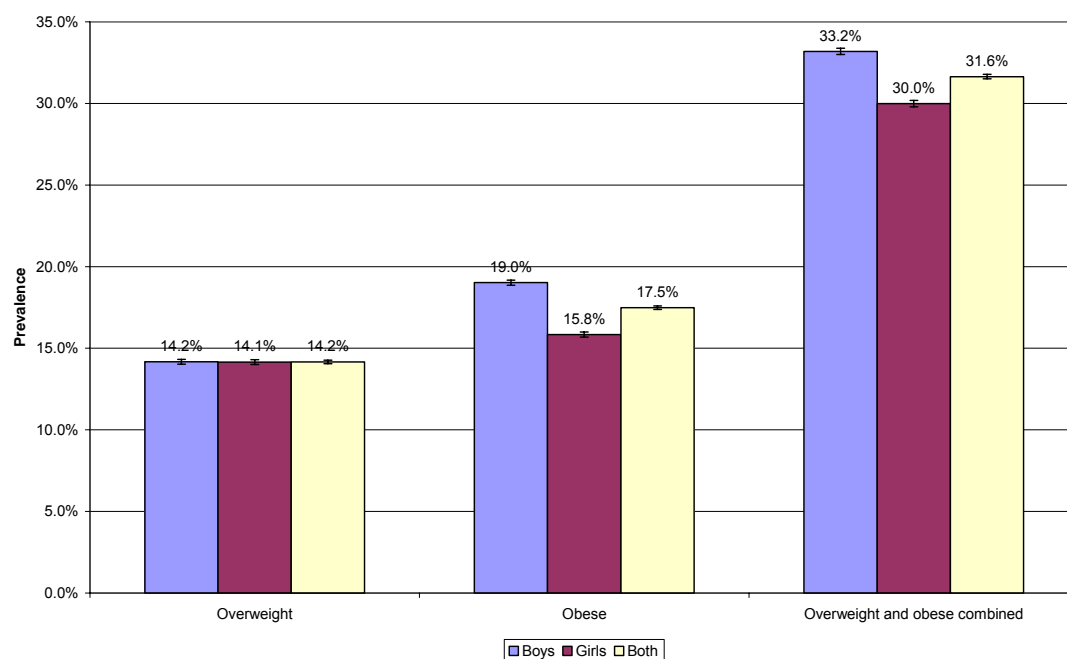


Figure 12: Prevalence of obese and overweight children in Year 6, by sex, England, 2006/07



3.4.5. Key findings:

- in Reception almost one in four of the children measured were classified as either obese or overweight: in Year 6 this rate was nearly one in three;
- the prevalence of obesity is significantly higher in boys than in girls in both age groups³;
- the prevalence of obesity is significantly higher in Year 6 than in Reception³;
- the percentage of children who are overweight is only slightly higher in Year 6 than in Reception;
- the percentage of children who are overweight is similar for boys and girls in year 6: in Reception, this rate is slightly higher for boys than for girls;
- in Reception the prevalence of overweight children is greater than the prevalence of obese. In Year 6, the opposite is true.

3.5. Prevalence of obese and overweight children by Strategic Health Authority (SHA)

3.5.1. Figures 13 and 14 show, for Reception and Year 6 respectively, the prevalence of obese and overweight children, with associated 95% confidence intervals, by the SHA of the child's school, in 2006/07. The bars are ordered by obesity prevalence. Detailed tables can be found in annex 1 showing overweight, obese and combined prevalence, with associated 95% confidence intervals, by year, at PCT, SHA and LA level.

Figure 13: Prevalence of obese and overweight children in Reception, by SHA, England, 2006/07

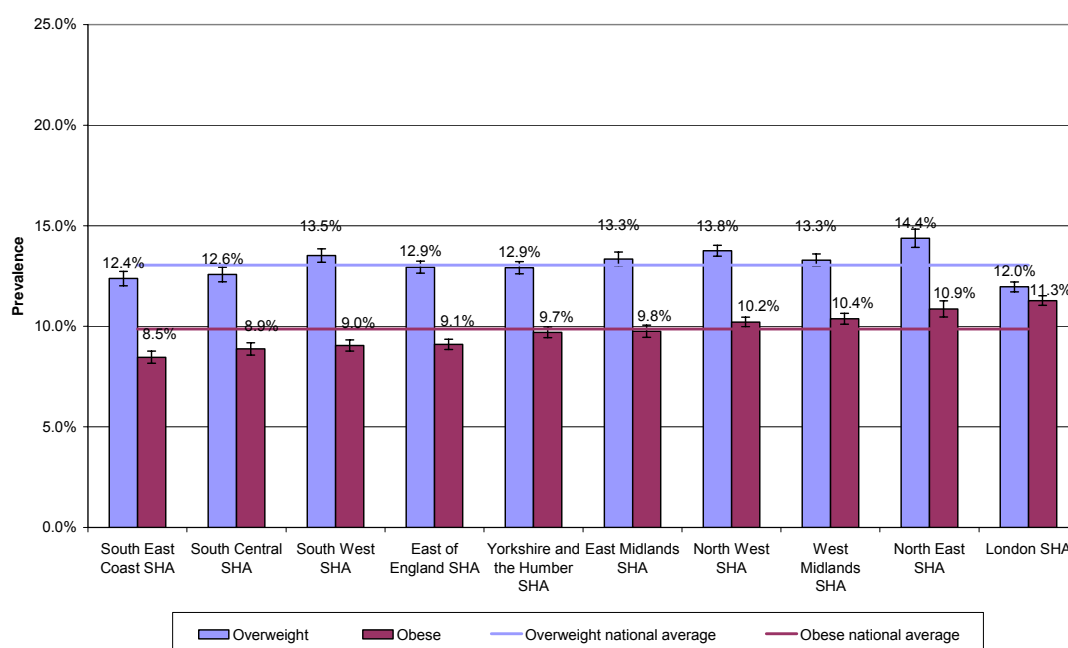
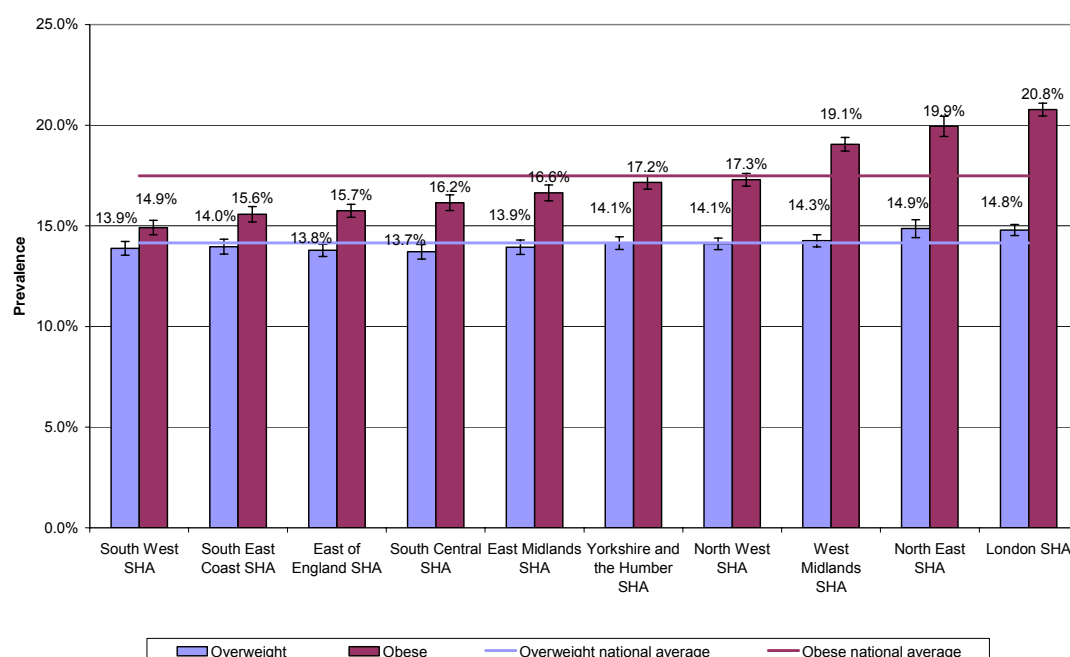
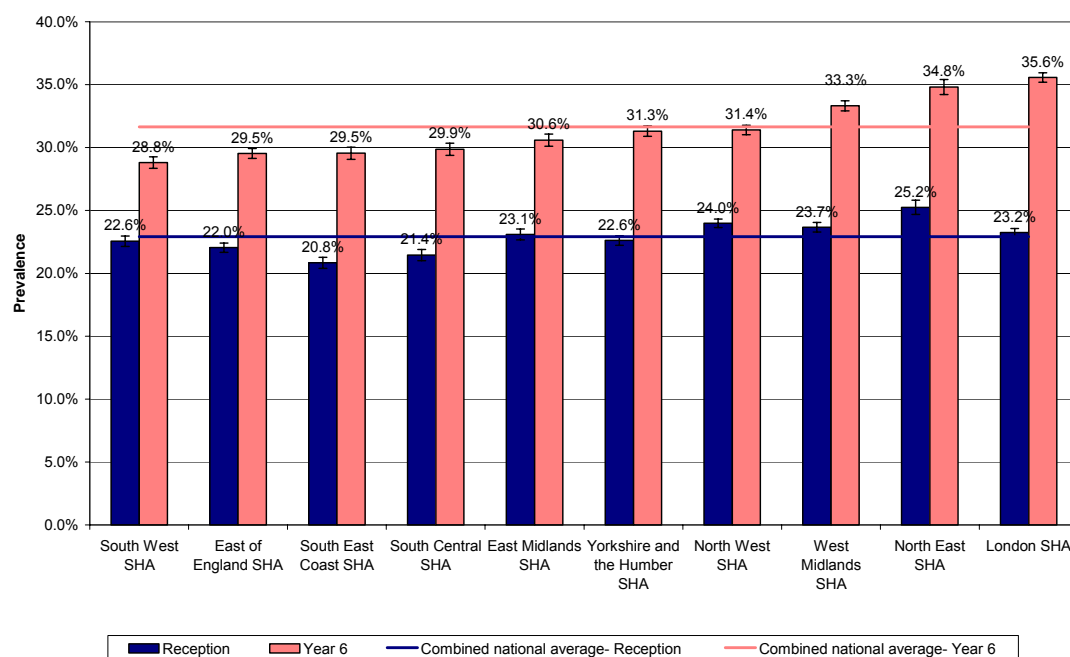


Figure 14: Prevalence of obese and overweight children in Year 6, by SHA, England, 2006/07



3.5.2. Figure 15 compares the prevalence of overweight and obese combined children, with associated 95% confidence intervals, in Reception and Year 6, by SHA, in 2006/07. The bars have been ranked by prevalence in Year 6.

Figure 15: Prevalence of “obese and overweight combined” children, by year and SHA, England, 2006/07



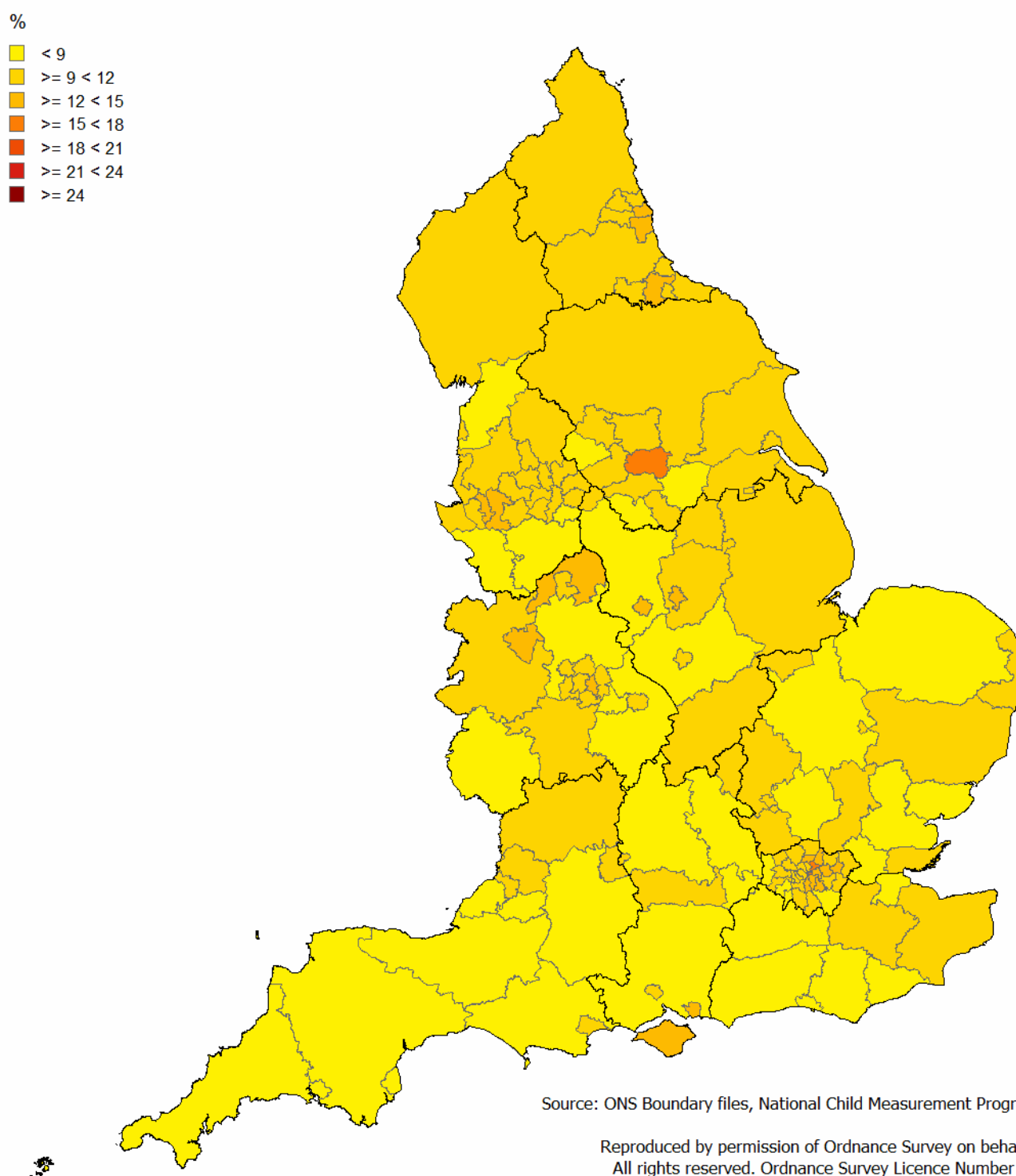
3.5.3. Key findings:

- Obesity prevalence is significantly higher than the national average in the North East, West Midlands and London SHAs for both school years.
- Obesity prevalence is significantly below the national average in the South East Coast, South Central, South West and East of England SHAs for children in both school years, as well as for Year 6 children in the East Midlands SHA.
- Areas with high obesity prevalence in one year group tend to also have high obesity prevalence in the other year group (figures 13 and 14). The order of SHAs, ranked by obesity prevalence, is similar for both school years, with the top four SHAs occupying the same rank order for children in both years. The relationship between obesity prevalence in each year can be quantified by the coefficient of determination¹⁰ (r^2). Here the coefficient of determination is 0.89 which means that 89% of the variation of the Year 6 obesity prevalence can be explained by variation in the Reception obesity prevalence.
- In Reception no relationship exists between the prevalence of obese and overweight children: where the prevalence of obese children is high, the prevalence of overweight children is not necessarily high. For example, London SHA has the *highest* obesity prevalence but the *lowest* overweight prevalence¹¹;
- In Year 6, a strong relationship exists between the prevalence of obese and overweight children: where the prevalence of obese children is high, the prevalence of overweight children tends to also be high¹²;
- There is slightly greater regional variation of obesity prevalence in Year 6 than in Reception¹³;
- For all SHAs, obesity prevalence is significantly higher in Year 6 than in Reception¹⁴, reflecting the national result. London SHA has the biggest difference with obesity prevalence 9.5 percentage points higher in Year 6 than in Reception. South West SHA has the smallest difference, with 5.5 percentage points difference between years;
- The prevalence of overweight children is only slightly higher in Year 6. London SHA again has the biggest difference between year groups with overweight prevalence 2.8 percentage points higher in Year 6 than in Reception.

3.6. Prevalence of overweight and obese children by PCT

3.6.1. Figures 16 and 17 show Reception and Year 6 obesity prevalence at PCT-level. Prevalence estimates at PCT-level have been calculated on the basis of the location of the child's school. More detailed tables can be found in annex 1.

Figure 16: Prevalence of obese children in Reception, by PCT, England 2006/07



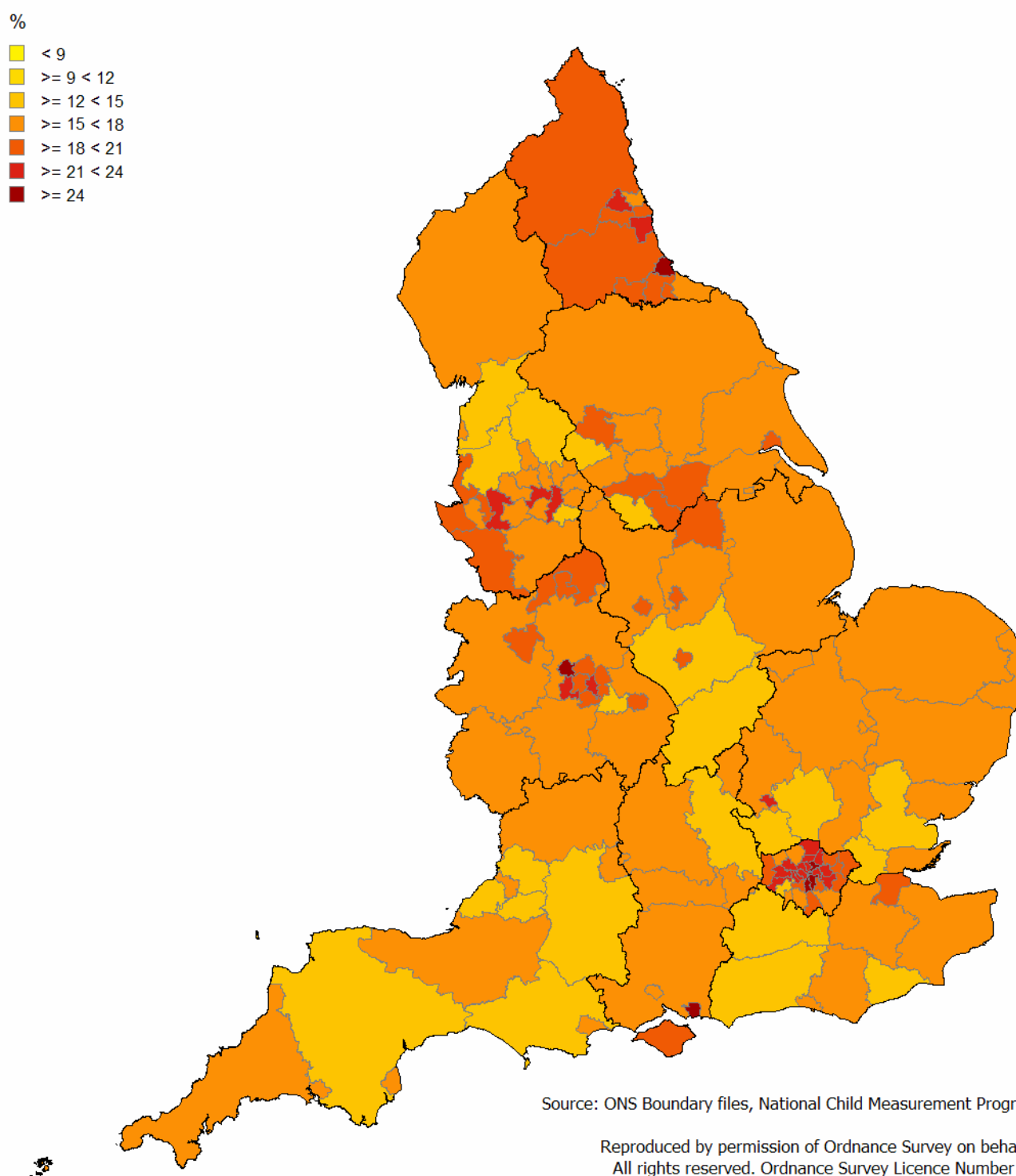
Source: ONS Boundary files, National Child Measurement Programme data.

Reproduced by permission of Ordnance Survey on behalf of HMSO.
All rights reserved. Ordnance Survey Licence Number 100044406.

Crown copyright and database right 2008.

© The Information Centre for health and social care

Figure 17: Prevalence of “obese” children in Year 6, by PCT, England 2006/07



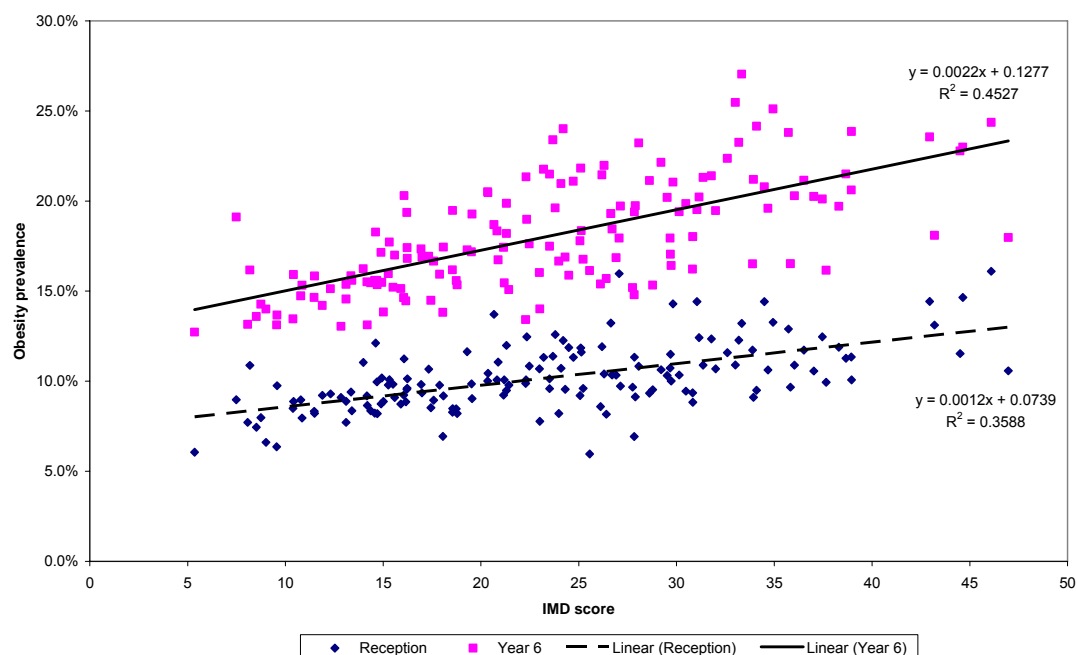
Crown copyright and database right 2008.

© The Information Centre for health and social care

Prevalence of obese and overweight children by deprivation (Index of Multiple Deprivation)

3.6.2. Figure 18 investigates the relationship between LA area deprivation (as measured by the 2007 Index of Multiple Deprivation¹⁵) and obesity prevalence. The higher the IMD score, the more deprived an area is deemed to be. Prevalence is based on the child's school location rather than their home address.

Figure 18: Prevalence of obese children against 2007 IMD score, by LA, England, 2006/07



3.6.3. Figure 18 shows that there is a significant positive relationship between deprivation (as measured by the 2007 IMD score) and obesity prevalence in children. Prevalence of obese in Year 6 children is about 10 percentage points higher in the most deprived LAs compared with the least deprived. The strength of the relationship between deprivation and obesity is fairly strong in both years: this is indicated by the proximity of the points to their line of best fit and supported by the r^2 values for each year.

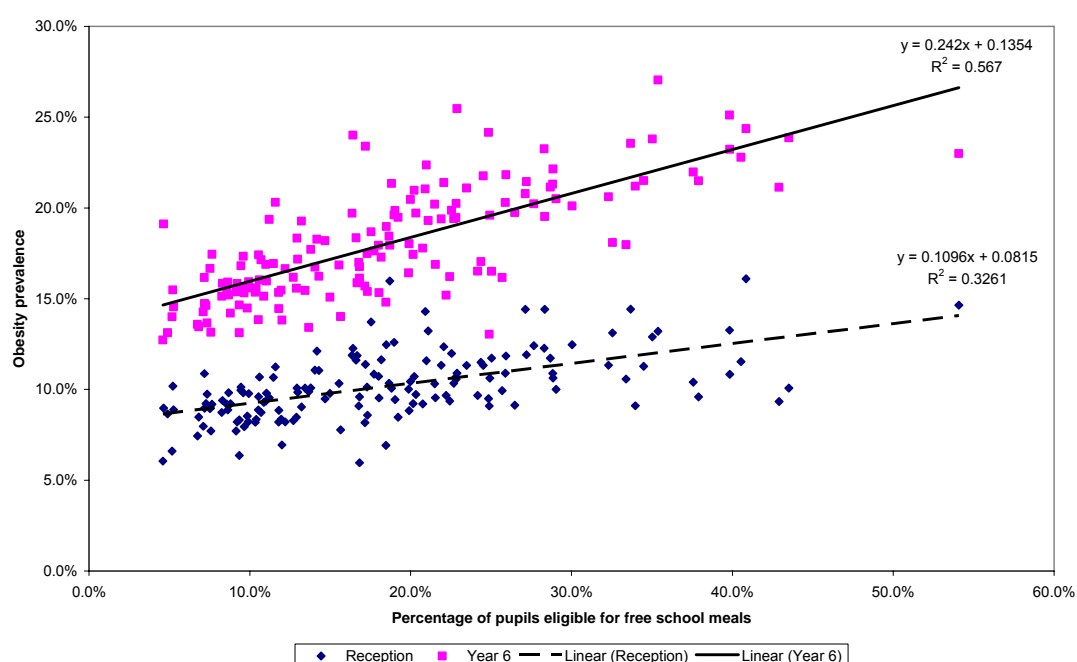
3.6.4. The gradient (steepness) of the line of best fit indicates the change in obesity prevalence for each unit change in the IMD score. The gradients, for Reception and Year 6 respectively, are 0.0012 and 0.0022. Both gradients are positive indicating that obesity prevalence tends to increase with IMD score. The gradient is steeper in Year 6, indicating that increases in IMD score lead to greater changes in obesity prevalence in Year 6 than in Reception.

3.7. Prevalence of obese and overweight children by deprivation (percentage of children eligible for free school meals)

3.7.1. The percentage of children eligible for free school meals in an area provides another indicator of deprivation. Since eligibility for free school meals is means-tested, those areas with a high percentage of children receiving free school meals are judged to be more deprived than areas with low eligibility for free school meals.

3.7.2. Figure 19 shows that a significant positive relationship exists between obesity prevalence and deprivation.

Figure 19: Prevalence of “obese” children against the percentage of children eligible for free school meals, by LA, England, 2006/07¹⁶



3.7.3. Prevalence of obesity in Year 6 children is about 10 percentage points higher in the most deprived LAs compared to the least deprived.

3.7.4. The strength of the linear relationship between deprivation and obesity is fairly strong in both years: this is indicated by the proximity of the points to their lines of best fit and supported by the r^2 values for each year.

3.7.5. The Year 6 r^2 value is higher here than in the previous section, suggesting that the percentage of pupils eligible for free school meals data provides a better predictor of obesity prevalence in Year 6 than IMD score. However, both definitions of deprived areas lead to the same findings:

- Areas with greater deprivation tend to have higher obesity prevalence in children than do areas with lower deprivation;
- The relationship between deprivation and obesity prevalence is stronger in Year 6 than in Reception.

3.8. Prevalence of obese and overweight children by ethnicity

- 3.8.1. In the 2006/07 NCMP, collection of the ethnicity of participating children was optional. Of the 876,416 children for whom valid measurements were submitted to the NCMP Database, 279,699 records (32%) included valid ethnic codes (excluding those “not stated”). PCTs were able to supply ethnic codes using either the NHS or DCSF classification. These codes were then mapped to the 17 NCMP ethnic categories¹⁷.
- 3.8.2. Differences in the prevalence of obese and overweight children by ethnic category should be interpreted with caution, in view of the low proportion of children for whom ethnic codes were collected. As a result, each ethnic category is likely to be missing data. If an ethnic category is missing data from a disproportionate number of heavier children, prevalence would be underestimated. Thus comparisons to other ethnic categories, where missing data were not atypical, would be biased.
- 3.8.3. Figures 20 and 21 show, for Reception and Year 6 respectively, the prevalence of obese and overweight children, with associated 95% confidence intervals, by ethnic category, in England, 2006/07. The bars have been ranked by obesity prevalence.

Figure 20: Prevalence of obese and overweight children in Reception, by ethnic category, England, 2006/07

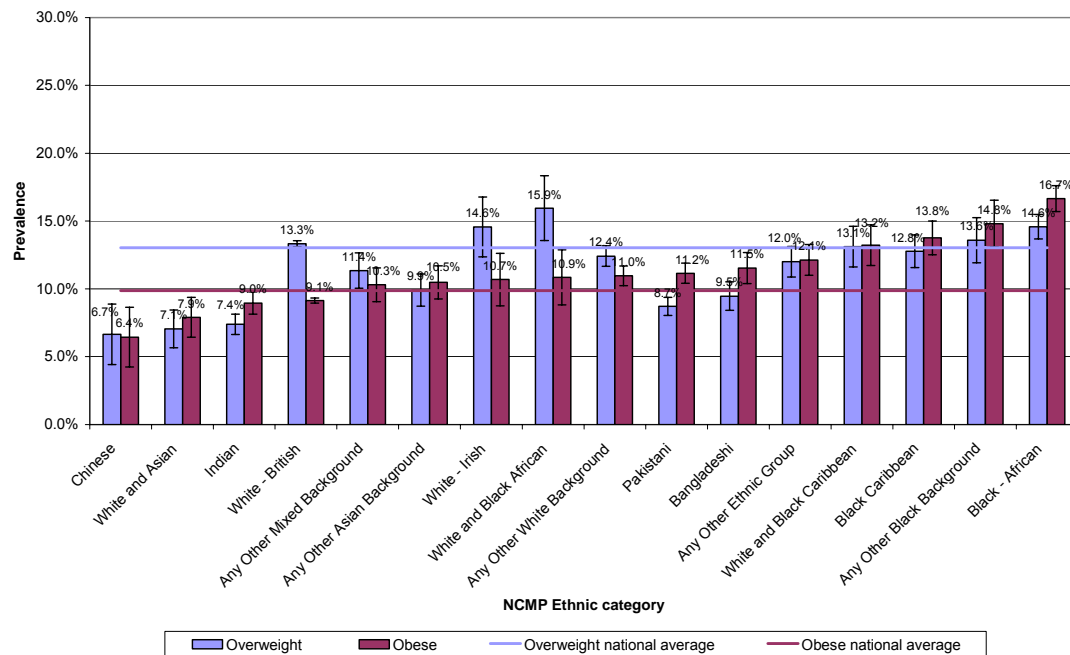
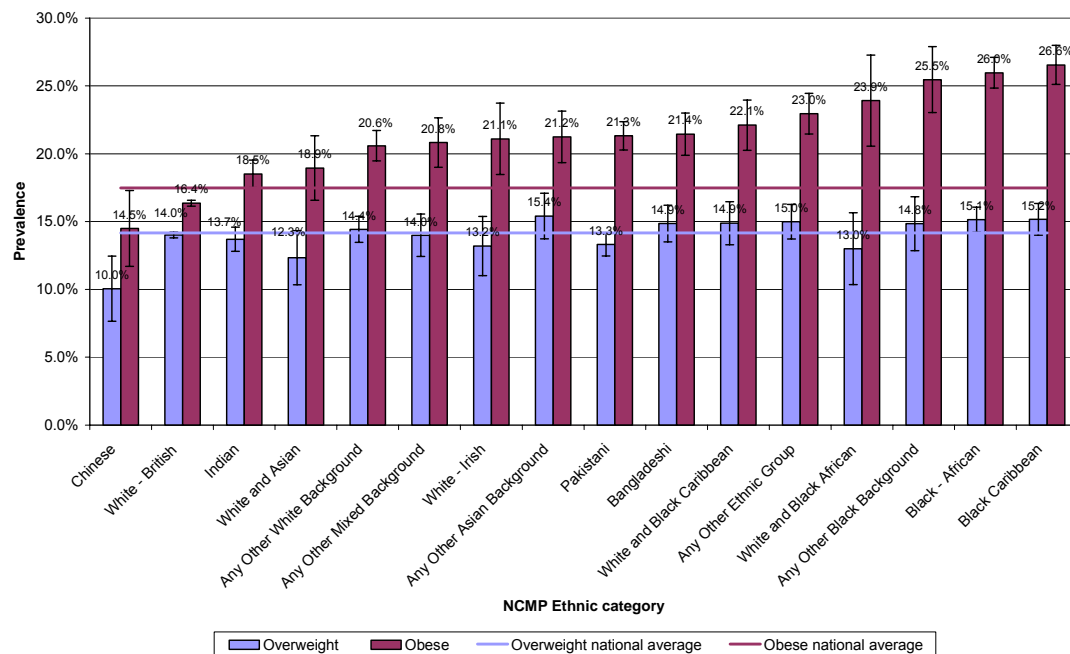


Figure 21: Prevalence of obese and overweight children in Year 6, by ethnic category, England, 2006/07



3.8.4. Key findings:

- Since a fairly low percentage (32%) of records was returned with ethnicity information, the prevalence estimates are potentially susceptible to bias and the confidence intervals for most ethnic groups are wide. Findings should therefore be treated with caution.
- Prevalence estimates for each year are very close to the estimates for White – British group, since this is proportionately the largest ethnic group in the sample.
- In year 6, obesity prevalence is significantly higher than the national average for children in all ethnic groups except Chinese, White and Asian, Indian and White British.
- In Reception, obesity prevalence for children in the following ethnic groups is higher than the national average: Black African, Any Other Black Background, Black Caribbean, White and Black Caribbean, Any Other Ethnic Group, Bangladeshi, Pakistani and Any Other White Background. For many of these groups, the difference is small in percentage terms but statistically significant.
- In Reception, obesity prevalence for children in the following ethnic groups is lower than the national average: Chinese, White and Asian, Indian and White British. For all of these groups, the difference is small in percentage terms but statistically significant.

3.9. Prevalence of obese and overweight children by rural/urban classification

- 3.9.1. Collection of the home postcode of participating children was optional for the 2006/07 NCMP. Of the 876,416 children for whom valid measurements were uploaded to the NCMP Database, 505,583 records (58%) included home postcodes.
- 3.9.2. To ensure security of these potentially identifiable sensitive data, postcodes were aggregated to the larger areas of lower super output areas (LSOA) when PCTs uploaded their data to the NCMP database. This meant that the IC did not hold home postcode of any child.
- 3.9.3. Each record was assigned a rural/urban classification¹⁸ according to the settlement form of the LSOA of the child.
- 3.9.4. Figures 21 and 22 show, for Reception and Year 6 respectively, the prevalence of obese and overweight children, by rural/urban classification, in England, 2006/07.

Figure 21: Prevalence of obese and overweight children in Reception, by rural/urban classification, England, 2006/07

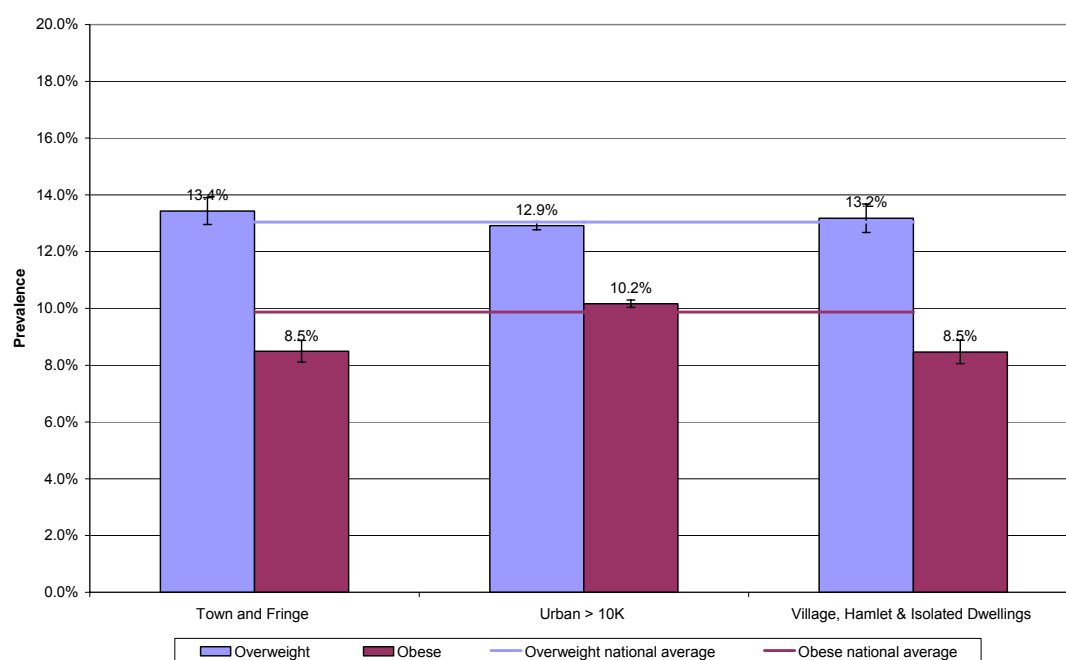
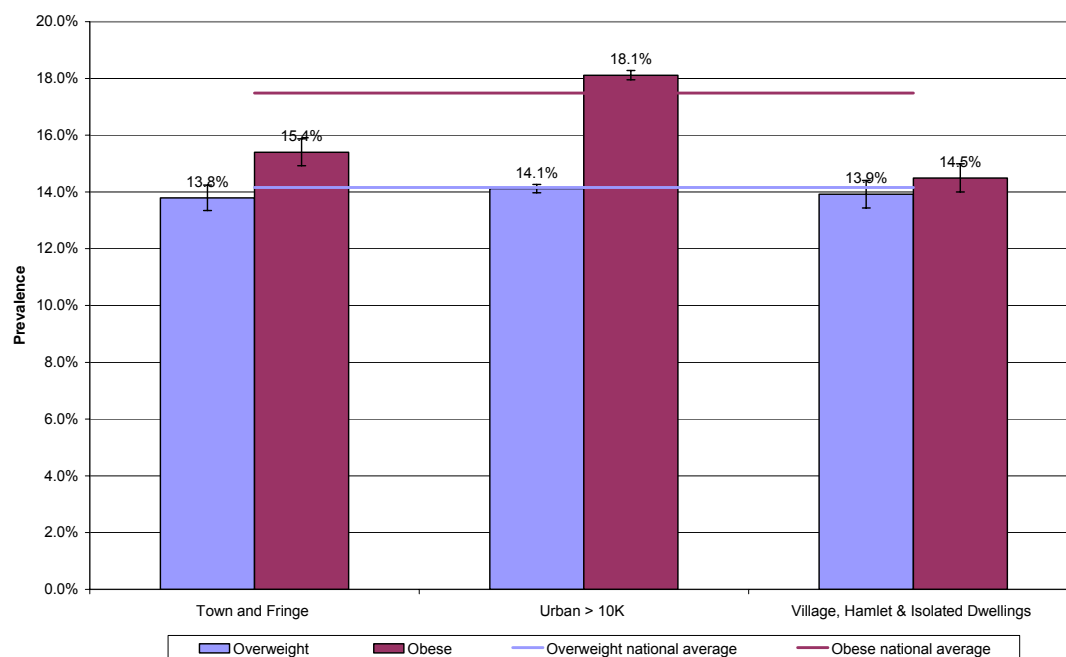


Figure 22: Prevalence of obese and overweight children in Year 6, by rural/urban classification, England, 2006/07



3.9.5. Key findings:

- Obesity prevalence is significantly higher in urban areas than in non-urban areas for both years;
- Overweight prevalence is similar between areas: there are no significant differences between areas in either year;
- Obesity prevalence is significantly higher in Year 6 than in Reception for all areas;
- The prevalence of overweight children from urban areas is significantly lower in Reception than in Year 6;

3.10. Comparison of results from the 2006/07 NCMP with the Health Survey for England 2006

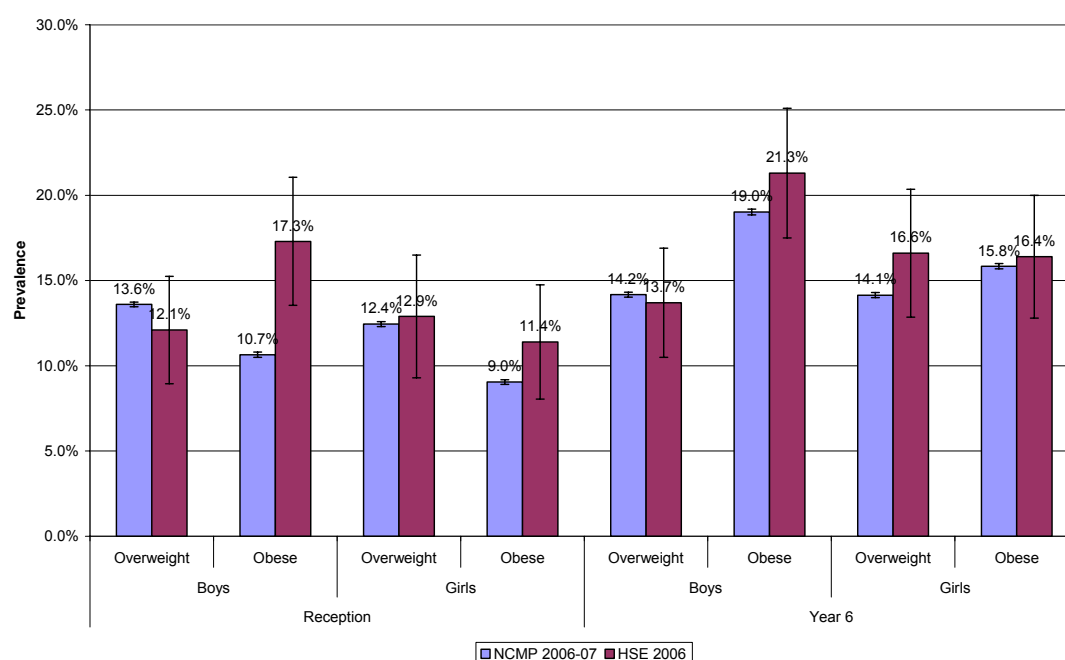
3.10.1. The best comparison figures available to compare with the NCMP findings are child obesity data from the Health Survey for England (HSE)¹⁹. The HSE is a series of sample-based surveys focusing on a range of health indicators including obesity in children.

3.10.2. It is important to note that there are a number of differences in the data collected for the HSE and the NCMP:

- HSE figures are based on a sample of children, whereas the NCMP is a census of all eligible children (albeit with an 80% participation rate for the NCMP);
- In the HSE 2006 a total of 7,257 children (aged 0-15 years) were interviewed. Of these, valid height and weight measurements were taken for 785 children aged 4-5 and 908 children aged 10-11;
- NCMP 2006/07 measured 876,416 children in total: 435,927 were aged 4 or 5 years and 440,489 were aged 10 or 11 years;
- The HSE uses a multi-stage stratified probability sampling design which is designed to ensure the sample is representative of the population of England. Therefore, the HSE provides a reference standard with which the NCMP figures can be compared.

3.10.3. Figure 23 compares the NCMP estimates of national obesity prevalence (for children in Reception and Year 6) with those obtained from the HSE 2006 (for children aged 4-5 and 10-11 years). These are the most recently published HSE data on child obesity.

Figure 23: Comparison of reported overweight and obesity prevalence rates: NCMP 2006/07 and the Health Survey for England 2006



3.10.4. Apart from for obese boys in Reception, the prevalence rates are very close and are not statistically significantly different for each study. The obesity prevalence estimate for boys in Reception is significantly higher in the HSE.

3.10.5. It is important to note that there are several differences in the survey design and analytical techniques applied in the studies, including:

- HSE collects data from children in private households whereas NCMP collects data from children in schools. Consequently HSE will exclude data from children living in institutions (for example, care homes) and NCMP will exclude data from children not attending school;
- NCMP excludes data from children in independent and special schools;
- NCMP is not a sample-based design. Either collection could include an element of bias if children who did not participate were atypical (for example, if they had higher BMI);
- The HSE sample of valid heights and weights for the relevant age groups is considerably smaller than in the NCMP sample (1,693 versus 876,416) and is therefore, at disaggregated levels, more susceptible to natural random variation.

Annex 1

- Tables A, B and C show prevalence and participation rates (percentage of eligible children who were measured) at PCT, SHA and LA level respectively.

Table A: PCT prevalence and participation rates for NCMP 2006/07

Primary Care Trust	Overweight				Obese				Participation rate and number of children measured		
	Reception		Year 6		Reception		Year 6		Reception	Year 6	Total
	Prevalence	±	Prevalence	±	Prevalence	±	Prevalence	±			
ASHTON, LEIGH AND WIGAN PCT	15.4%	1.3%	13.8%	1.3%	10.3%	1.1%	16.9%	1.4%	93% (2980)	77% (2696)	85% (5676)
BARKING AND DAGENHAM PCT	13.5%	1.7%	16.4%	2.2%	14.4%	1.7%	19.9%	2.4%	67% (1558)	48% (1100)	58% (2658)
BARNET PCT	11.4%	1.1%	14.5%	1.3%	9.2%	1.0%	17.3%	1.4%	93% (3023)	88% (2932)	90% (5955)
BARNSELY PCT	12.4%	1.4%	15.2%	1.4%	9.4%	1.3%	19.9%	1.6%	89% (2043)	88% (2437)	88% (4480)
BASSETLAW PCT	14.5%	2.3%	13.8%	2.1%	11.4%	2.1%	18.8%	2.4%	83% (911)	82% (1060)	82% (1971)
BATH AND NORTH EAST SOMERSET PCT	14.6%	1.8%	13.2%	1.8%	8.3%	1.4%	14.7%	1.9%	95% (1502)	81% (1365)	88% (2867)
BEDFORDSHIRE PCT	12.8%	1.1%	12.9%	1.1%	9.3%	0.9%	15.1%	1.1%	85% (3776)	82% (3859)	84% (7635)
BERKSHIRE EAST PCT	10.9%	1.1%	13.8%	1.2%	8.6%	1.0%	16.1%	1.3%	98% (3296)	81% (2999)	89% (6295)
BERKSHIRE WEST PCT	11.4%	1.2%	14.5%	1.1%	9.7%	1.1%	15.3%	1.1%	70% (2600)	86% (3950)	79% (6550)
BEXLEY CARE TRUST	12.1%	1.4%	15.1%	1.5%	9.5%	1.3%	19.4%	1.6%	79% (2012)	78% (2241)	79% (4253)
BIRMINGHAM EAST AND NORTH PCT	12.1%	1.0%	13.6%	1.1%	10.3%	0.9%	20.3%	1.3%	88% (4008)	87% (3960)	87% (7968)
BLACKBURN WITH DARWEN PCT	12.8%	1.6%	15.2%	1.7%	9.8%	1.4%	16.4%	1.8%	85% (1666)	83% (1687)	84% (3353)
BLACKPOOL PCT	13.6%	2.2%	12.3%	2.2%	9.9%	1.9%	16.2%	2.5%	64% (926)	50% (829)	56% (1755)
BOLTON PCT	13.2%	1.3%	13.9%	1.3%	10.7%	1.2%	17.9%	1.4%	85% (2751)	83% (2798)	84% (5549)
BOURNEMOUTH AND POOLE PCT	13.6%	1.4%	13.3%	1.4%	10.4%	1.3%	15.8%	1.5%	88% (2289)	80% (2215)	84% (4504)
BRADFORD AND AIREDALE PCT	12.6%	0.9%	13.6%	0.9%	10.7%	0.8%	19.5%	1.1%	85% (5477)	81% (5169)	83% (10646)
BRENT TEACHING PCT	11.0%	1.2%	14.8%	1.4%	10.8%	1.2%	22.5%	1.6%	88% (2675)	76% (2520)	82% (5195)
BRIGHTON AND HOVE CITY PCT	7.5%	1.1%	14.1%	1.6%	6.0%	1.0%	16.1%	1.7%	85% (2115)	73% (1710)	79% (3825)
BRISTOL PCT	12.2%	1.1%	13.0%	1.7%	9.7%	1.0%	15.2%	1.8%	89% (3278)	44% (1547)	67% (4825)
BROMLEY PCT	11.9%	1.2%	12.5%	1.2%	8.4%	1.0%	15.5%	1.3%	99% (2907)	82% (2839)	90% (5746)
BUCKINGHAMSHIRE PCT	9.6%	0.9%	13.1%	1.0%	6.5%	0.7%	13.9%	1.0%	81% (4454)	85% (4565)	83% (9019)
BURY PCT	12.6%	1.5%	14.4%	1.7%	9.8%	1.4%	15.1%	1.7%	84% (1799)	74% (1611)	79% (3410)
CALDERDALE PCT	11.0%	1.3%	13.9%	1.4%	7.8%	1.1%	14.0%	1.4%	89% (2122)	90% (2355)	90% (4477)
CAMBRIDGESHIRE PCT	11.3%	0.9%	13.4%	1.0%	8.2%	0.8%	15.8%	1.1%	73% (4335)	69% (4166)	71% (8501)
CAMDEN PCT	11.9%	1.8%	12.8%	1.9%	9.3%	1.6%	21.1%	2.3%	91% (1307)	89% (1211)	90% (2518)
CENTRAL AND EASTERN CHESHIRE PCT	13.4%	1.1%	14.8%	1.1%	8.6%	0.9%	16.7%	1.1%	79% (3506)	82% (4096)	80% (7602)
CENTRAL LANCASHIRE PCT	16.9%	1.2%	12.4%	1.3%	10.2%	1.0%	13.9%	1.3%	72% (3605)	49% (2590)	60% (6195)
CITY AND HACKNEY TEACHING PCT	14.4%	1.5%	16.0%	1.6%	16.0%	1.6%	24.2%	1.9%	95% (2097)	94% (2038)	95% (4135)
CORNWALL AND ISLES OF SCILLY PCT	14.5%	1.4%	14.2%	1.4%	8.2%	1.1%	16.7%	1.5%	48% (2278)	42% (2371)	45% (4649)
COUNTY DURHAM PCT	14.5%	1.0%	14.3%	1.0%	9.7%	0.9%	19.7%	1.2%	100% (4380)	84% (4560)	91% (8940)
COVENTRY TEACHING PCT	14.6%	1.3%	13.7%	1.2%	11.3%	1.2%	19.4%	1.4%	83% (2789)	89% (3196)	86% (5985)
CROYDON PCT	12.5%	1.2%	13.7%	1.2%	12.0%	1.1%	19.9%	1.3%	83% (3078)	87% (3392)	85% (6470)
CUMBRIA PCT	13.6%	1.0%	13.3%	1.2%	10.1%	0.9%	15.5%	1.3%	82% (4358)	53% (2847)	67% (7205)
DARLINGTON PCT	16.5%	2.2%	14.3%	2.0%	10.7%	1.9%	21.0%	2.3%	97% (1055)	97% (1159)	97% (2214)
DERBY CITY PCT	16.3%	1.5%	14.5%	1.4%	13.2%	1.3%	19.3%	1.6%	90% (2435)	83% (2279)	87% (4714)
DERBYSHIRE COUNTY PCT	14.2%	0.9%	13.6%	0.8%	8.5%	0.7%	15.6%	0.9%	90% (6288)	82% (6610)	86% (12898)
DEVON PCT	12.9%	0.9%	13.9%	0.9%	8.5%	0.8%	14.5%	0.9%	81% (5135)	82% (6359)	82% (11494)
DONCASTER PCT	12.7%	1.2%	14.2%	1.3%	8.8%	1.0%	18.0%	1.4%	87% (2831)	77% (2890)	81% (5721)
DORSET PCT	13.5%	1.2%	13.8%	1.2%	8.7%	1.0%	13.1%	1.2%	85% (3109)	76% (3269)	80% (6378)
DUDLEY PCT	13.9%	1.2%	15.1%	1.2%	11.4%	1.1%	23.4%	1.4%	97% (3330)	89% (3513)	92% (6843)
EALING PCT	12.1%	1.3%	15.3%	1.3%	11.8%	1.2%	21.8%	1.5%	79% (2578)	89% (2877)	84% (5455)
EAST AND NORTH HERTFORDSHIRE PCT	12.6%	0.9%	13.6%	0.9%	8.8%	0.8%	14.3%	0.9%	85% (4973)	83% (5253)	84% (10226)
EAST LANCASHIRE PCT	13.5%	1.1%	13.4%	1.3%	10.1%	1.0%	13.5%	1.3%	79% (3607)	52% (2488)	65% (6095)
EAST RIDING OF YORKSHIRE PCT	13.2%	1.5%	14.0%	1.3%	9.2%	1.3%	15.5%	1.3%	67% (1916)	80% (2939)	74% (4855)
EAST SUSSEX DOWNS AND WEALD PCT	14.0%	1.3%	14.3%	1.3%	8.9%	1.1%	16.1%	1.4%	83% (2541)	81% (2771)	82% (5312)
EASTERN AND COASTAL KENT PCT	14.0%	1.0%	13.4%	0.9%	9.7%	0.9%	17.6%	1.0%	58% (4280)	72% (5905)	65% (10185)
ENFIELD PCT	13.2%	1.2%	14.9%	1.3%	11.9%	1.2%	21.5%	1.5%	84% (3004)	82% (2918)	83% (5922)
GATESHEAD PCT	14.4%	1.6%	13.8%	1.5%	10.3%	1.4%	20.2%	1.7%	100% (1852)	99% (2074)	99% (3926)
GLOUCESTERSHIRE PCT	14.3%	1.0%	14.2%	1.0%	10.0%	0.9%	15.6%	1.0%	83% (4618)	78% (4936)	80% (9554)
GREAT YARMOUTH AND WAVENEY PCT	13.3%	1.5%	14.5%	1.5%	10.4%	1.4%	16.8%	1.6%	92% (1916)	82% (2047)	87% (3963)
GREENWICH TEACHING PCT	13.2%	1.9%	13.9%	1.6%	9.1%	1.6%	21.2%	1.9%	44% (1187)	71% (1821)	57% (3008)
HALTON AND ST HELENS PCT	15.8%	1.5%	15.3%	1.3%	13.0%	1.4%	21.6%	1.5%	66% (2137)	89% (3039)	78% (5176)
HAMMERSMITH AND FULHAM PCT	14.7%	2.3%	15.7%	2.4%	10.8%	2.0%	23.2%	2.8%	73% (905)	78% (904)	75% (1809)
HAMPSHIRE PCT	14.0%	0.7%	13.6%	0.6%	8.9%	0.6%	15.9%	0.7%	78% (10112)	81% (11463)	80% (21575)
HARINGEY TEACHING PCT	12.5%	1.3%	14.5%	1.5%	12.9%	1.3%	23.8%	1.8%	88% (2551)	76% (2055)	82% (4606)
HARROW PCT	10.5%	1.4%	16.6%	1.6%	9.1%	1.3%	17.0%	1.6%	88% (1902)	83% (2018)	85% (3920)
HARTLEPOOL PCT	9.5%	2.5%	15.3%	2.1%	9.5%	2.5%	24.2%	2.5%	52% (537)	84% (1097)	70% (1634)
HASTINGS AND ROTHER PCT	11.6%	1.6%	13.2%	1.7%	7.0%	1.3%	13.9%	1.8%	93% (1492)	77% (1472)	84% (2964)
HAVERING PCT	14.4%	1.7%	17.0%	1.6%	11.2%	1.5%	20.3%	1.7%	70% (1683)	80% (2221)	75% (3884)
HEART OF BIRMINGHAM TEACHING PCT	10.7%	0.9%	13.9%	1.1%	12.7%	1.0%	23.8%	1.3%	86% (4150)	88% (3974)	87% (8124)
HEREFORDSHIRE PCT	12.4%	1.8%	13.9%	1.8%	8.9%	1.5%	16.7%	1.9%	83% (1342)	77% (1470)	80% (2812)
HEYWOOD, MIDDLETON AND ROCHDALE PCT	14.3%	1.4%	13.3%	1.4%	11.7%	1.3%	16.5%	1.5%	98% (2328)	91% (2308)	94% (4636)
HILLINGDON PCT	11.1%	1.2%	14.1%	1.3%	8.5%	1.1%	19.5%	1.5%	90% (2666)	90% (2721)	90% (5387)
HOUNSLOW PCT	11.4%	1.3%	15.8%	1.5%	11.3%	1.3%	21.8%	1.7%	91% (2146)	94% (2182)	92% (4328)
HULL PCT	15.0%	1.5%	14.8%	1.6%	11.9%	1.3%	19.7%	1.7%	91% (2272)	69% (1996)	79% (4268)
ISLE OF WIGHT NHS PCT	16.2%	2.3%	15.4%	1.9%	13.7%	2.1%	18.7%	2.1%	92% (999)	87% (1338)	89% (2337)
ISLINGTON PCT	12.8%	1.6%	14.1%	1.7%	10.1%	1.5%	23.9%	2.1%	91% (1588)	89% (1538)	90% (3126)
KENSINGTON AND CHELSEA PCT	11.2%	2.1%	17.2%	2.7%	9.6%	2.0%	21.5%	2.9%	95% (855)	88% (777)	92% (1632)
KINGSTON PCT	9.7%	1.6%	14.6%	1.9%	7.7%	1.4%	15.4%	2.0%	93% (1346)	89% (1313)	91% (2659)
KIRKLEES PCT	13.0%	1.0%	14.5%	1.1%	9.6%	0.9%	16.8%	1.1%	97% (4440)	86% (4229)	91% (8669)
KNOWSLEY PCT	17.0%	1.9%	16.1%	1.9%	13.0%	1.7%	18.3%	2.0%	90% (1495)	72% (1455)	80% (2950)
LAMBETH PCT	13.4%	1.5%	16.4%	1.7%	13.1%	1.5%	25.2%	2.0%	74% (1949)	74% (1785)	74% (3734)
LEEDS PCT	11.7%	0.8%	14.4%	0.8%	9.2%	0.7%	17.8%	0.9%	92% (6931)	98% (7499)	95% (14430)
LEICESTER CITY PCT	11.0%	1.1%	13.6%	1.3%	10.6%	1.1%	19.6%	1.5%	81% (2966)	74% (2536)	78% (5502)
LEICESTERSHIRE COUNTY AND RUTLAND PCT	13.1%	0.9%	14.7%	0.9%	9.0%	0.7%	14.9%	0.9%	86% (5847)	83% (6305)	85% (12152)
LEWISHAM PCT	15.7%	2.0%	15.7%	2.1%	14.4%	1.9%	19.5%	2.3%	47% (1297)	40% (1106)	43% (2403)

Primary Care Trust	Overweight				Obese				Participation rate and number of children measured		
	Reception		Year 6		Reception		Year 6		Reception	Year 6	Total
	Prevalence	±	Prevalence	±	Prevalence	±	Prevalence	±			
LINCOLNSHIRE PCT	13.2%	1.1%	13.6%	1.3%	9.2%	0.9%	17.4%	1.4%	58% (3766)	47% (2872)	53% (6638)
LIVERPOOL PCT	12.6%	1.0%	14.1%	1.1%	10.6%	0.9%	17.9%	1.2%	93% (4105)	78% (3827)	85% (7932)
LUTON PCT	13.0%	1.4%	13.3%	1.4%	11.3%	1.3%	21.1%	1.7%	78% (2129)	84% (2138)	81% (4267)
MANCHESTER PCT	12.7%	1.0%	14.7%	1.1%	11.5%	1.0%	22.8%	1.3%	87% (4135)	88% (3893)	87% (8028)
MEDWAY PCT	11.5%	1.3%	15.3%	1.4%	8.9%	1.2%	19.3%	1.5%	79% (2253)	87% (2719)	83% (4972)
MID ESSEX PCT	15.1%	1.3%	13.9%	1.2%	8.2%	1.0%	14.9%	1.2%	77% (2940)	76% (3391)	76% (6331)
MIDDLESBROUGH PCT	13.4%	1.9%	17.3%	2.0%	11.3%	1.7%	20.6%	2.1%	60% (1279)	65% (1436)	63% (2715)
MILTON KEYNES PCT	14.3%	1.4%	14.2%	1.5%	10.1%	1.2%	17.7%	1.6%	88% (2262)	81% (2184)	85% (4446)
NEWCASTLE PCT	13.6%	1.4%	14.5%	1.5%	10.9%	1.3%	21.3%	1.7%	87% (2251)	86% (2182)	86% (4433)
NEWHAM PCT	10.1%	1.0%	14.7%	1.2%	14.4%	1.2%	23.6%	1.4%	88% (3327)	89% (3459)	89% (6786)
NORFOLK PCT	11.9%	0.8%	14.1%	0.9%	8.0%	0.7%	15.8%	0.9%	88% (5780)	82% (6201)	85% (11981)
NORTH EAST ESSEX PCT	12.4%	1.3%	15.1%	1.3%	8.2%	1.1%	16.4%	1.4%	88% (2515)	84% (2808)	86% (5323)
NORTH EAST LINCOLNSHIRE PCT	16.9%	1.9%	14.6%	1.7%	10.0%	1.5%	16.4%	1.8%	91% (1468)	80% (1589)	85% (3057)
NORTH LANCASHIRE PCT	12.1%	1.4%	13.9%	1.6%	8.9%	1.2%	12.7%	1.6%	87% (2237)	54% (1744)	69% (3981)
NORTH LINCOLNSHIRE PCT	11.1%	1.6%	14.8%	1.8%	11.1%	1.6%	16.7%	1.9%	94% (1519)	75% (1506)	83% (3025)
NORTH SOMERSET PCT	14.4%	1.7%	12.7%	1.7%	8.9%	1.3%	13.8%	1.8%	83% (1714)	66% (1394)	74% (3108)
NORTH STAFFORDSHIRE PCT	15.3%	1.8%	15.1%	1.5%	12.4%	1.6%	18.8%	1.6%	83% (1579)	86% (2182)	85% (3761)
NORTH TEES PCT	14.9%	1.6%	13.6%	1.8%	12.6%	1.5%	19.6%	2.0%	95% (1898)	67% (1468)	80% (3366)
NORTH TYNESIDE PCT	15.9%	1.7%	15.0%	1.6%	10.1%	1.4%	17.5%	1.7%	91% (1776)	86% (1887)	88% (3663)
NORTH YORKSHIRE AND YORK PCT	14.6%	0.9%	14.3%	0.8%	9.2%	0.7%	15.8%	0.9%	93% (6556)	87% (6948)	90% (13504)
NORTHAMPTONSHIRE PCT	13.0%	0.8%	14.0%	1.0%	9.2%	0.7%	14.6%	1.0%	88% (6712)	64% (5112)	75% (11824)
NORTHUMBERLAND CARE TRUST	14.0%	1.3%	14.0%	1.3%	10.1%	1.1%	18.3%	1.4%	91% (2839)	82% (2847)	86% (5686)
NOTTINGHAM CITY PCT	12.7%	1.3%	13.9%	1.4%	12.5%	1.3%	20.1%	1.6%	85% (2423)	80% (2367)	83% (4790)
NOTTINGHAMSHIRE COUNTY PCT	13.3%	0.9%	13.6%	0.9%	9.6%	0.8%	16.9%	0.9%	84% (5598)	80% (5992)	82% (11590)
OLDHAM PCT	11.5%	1.2%	13.7%	1.3%	9.4%	1.1%	16.2%	1.4%	88% (2607)	85% (2571)	87% (5178)
OXFORDSHIRE PCT	12.2%	0.9%	13.0%	0.9%	8.0%	0.7%	15.4%	1.0%	89% (5236)	84% (4966)	87% (10202)
PETERBOROUGH PCT	17.2%	1.7%	15.5%	1.7%	11.9%	1.4%	15.9%	1.7%	100% (1981)	79% (1770)	89% (3751)
PLYMOUTH TEACHING PCT	13.9%	1.5%	14.3%	1.5%	8.6%	1.2%	15.4%	1.5%	89% (2178)	82% (2222)	85% (4400)
PORTSMOUTH CITY TEACHING PCT	15.4%	1.8%	14.9%	1.8%	12.3%	1.6%	24.0%	2.1%	86% (1615)	74% (1537)	80% (3152)
REDBRIDGE PCT	10.0%	1.1%	13.9%	1.3%	10.6%	1.1%	20.9%	1.5%	95% (2800)	85% (2767)	90% (5567)
REDCAR AND CLEVELAND PCT	11.9%	1.9%	14.1%	1.9%	11.5%	1.8%	17.0%	2.0%	59% (1166)	64% (1355)	62% (2521)
RICHMOND AND TWICKENHAM PCT	11.4%	1.5%	12.2%	1.7%	6.4%	1.2%	13.1%	1.8%	92% (1714)	91% (1410)	91% (3124)
ROTHERHAM PCT	13.5%	1.3%	15.0%	1.4%	10.3%	1.2%	18.4%	1.5%	91% (2563)	79% (2559)	84% (5122)
SALFORD PCT	14.5%	1.6%	14.9%	1.5%	11.7%	1.4%	21.1%	1.8%	85% (1943)	87% (2037)	86% (3980)
SANDWELL PCT	11.3%	1.2%	13.5%	1.3%	10.6%	1.2%	20.2%	1.5%	68% (2623)	72% (2751)	70% (5374)
SEFTON PCT	15.6%	1.5%	14.3%	1.3%	11.6%	1.3%	18.4%	1.4%	86% (2334)	89% (2794)	88% (5128)
SHEFFIELD PCT	9.7%	0.9%	12.5%	1.0%	6.9%	0.8%	14.8%	1.0%	81% (4248)	82% (4520)	82% (8768)
SHROPSHIRE COUNTY PCT	14.8%	1.5%	13.4%	1.3%	10.1%	1.2%	16.8%	1.5%	86% (2290)	80% (2474)	83% (4764)
SOLIHULL CARE TRUST	12.1%	1.5%	13.9%	1.6%	8.9%	1.3%	14.5%	1.6%	79% (1773)	71% (1895)	74% (3668)
SOMERSET PCT	13.7%	1.0%	13.7%	1.0%	8.7%	0.8%	15.1%	1.0%	91% (4420)	84% (4558)	87% (8978)
SOUTH BIRMINGHAM PCT	13.3%	1.2%	14.4%	1.5%	10.5%	1.1%	19.5%	1.7%	93% (2931)	58% (2208)	74% (5139)
SOUTH EAST ESSEX PCT	11.0%	1.2%	14.4%	1.3%	9.2%	1.1%	16.3%	1.3%	83% (2703)	78% (2987)	80% (5690)
SOUTH GLoucestershire PCT	13.0%	1.3%	14.0%	1.7%	9.7%	1.2%	13.7%	1.7%	88% (2462)	53% (1661)	69% (4123)
SOUTH STAFFORDSHIRE PCT	12.1%	1.0%	14.1%	0.9%	8.4%	0.9%	16.8%	1.0%	61% (3737)	80% (5655)	71% (9392)
SOUTH TYNESIDE PCT	14.8%	1.9%	15.7%	1.8%	12.4%	1.7%	20.2%	2.0%	96% (1369)	91% (1607)	93% (2976)
SOUTH WEST ESSEX PCT	9.7%	1.0%	12.9%	1.1%	8.3%	0.9%	14.9%	1.2%	76% (3315)	73% (3509)	74% (6824)
SOUTHAMPTON CITY PCT	11.1%	1.5%	13.2%	1.6%	9.5%	1.4%	16.9%	1.7%	85% (1750)	83% (1786)	84% (3536)
SOUTHWARK PCT	13.8%	1.4%	13.9%	1.5%	13.3%	1.3%	27.1%	1.9%	84% (2449)	77% (2158)	81% (4607)
STOCKPORT PCT	10.6%	1.2%	11.5%	1.3%	6.9%	1.0%	13.8%	1.4%	87% (2435)	72% (2185)	79% (4620)
STOKE ON TRENT PCT	14.6%	1.6%	14.1%	1.5%	10.9%	1.4%	20.4%	1.7%	74% (1978)	73% (2140)	73% (4118)
SUFFOLK PCT	13.8%	1.0%	13.7%	1.0%	9.6%	0.8%	16.2%	1.0%	97% (4984)	82% (5011)	89% (9995)
SUNDERLAND TEACHING PCT	15.4%	1.4%	17.0%	1.4%	12.4%	1.3%	21.4%	1.5%	90% (2461)	83% (2729)	86% (5190)
SURREY PCT	12.2%	0.7%	13.6%	0.8%	7.7%	0.6%	13.2%	0.8%	78% (8181)	71% (7452)	75% (15633)
SUTTON AND MERTON PCT	12.2%	1.1%	16.6%	1.3%	11.7%	1.1%	17.2%	1.3%	89% (3198)	88% (3196)	88% (6394)
SWINDON PCT	13.6%	1.5%	15.3%	1.6%	9.8%	1.3%	17.3%	1.7%	89% (1955)	81% (1955)	85% (3910)
TAMESIDE AND GLOSSOP PCT	14.5%	1.5%	13.6%	1.6%	9.3%	1.2%	15.1%	1.7%	78% (2103)	58% (1788)	67% (3891)
TELFORD AND WREKIN PCT	17.0%	1.9%	16.0%	1.7%	12.5%	1.6%	19.0%	1.9%	85% (1557)	84% (1686)	85% (3243)
TORBAY CARE TRUST	12.7%	2.0%	14.5%	2.1%	8.2%	1.7%	15.7%	2.1%	84% (1016)	82% (1115)	83% (2131)
TOWER HAMLETS PCT	11.1%	1.3%	14.2%	1.4%	14.6%	1.4%	23.0%	1.7%	83% (2424)	88% (2370)	85% (4794)
TRAFFORD PCT	15.2%	1.5%	14.9%	1.5%	10.7%	1.3%	16.9%	1.6%	92% (2128)	86% (2161)	89% (4289)
WAKEFIELD DISTRICT PCT	16.7%	1.6%	13.7%	1.5%	16.0%	1.6%	17.9%	1.6%	82% (2035)	56% (2157)	66% (4192)
WALSALL TEACHING PCT	12.3%	1.2%	14.7%	1.3%	10.3%	1.1%	19.4%	1.5%	92% (2843)	87% (2834)	89% (5677)
WALTHAM FOREST PCT	10.4%	1.3%	14.4%	1.6%	12.2%	1.4%	23.1%	1.9%	81% (2171)	75% (1877)	79% (4048)
WANDSWORTH PCT	10.4%	1.4%	13.8%	1.6%	10.0%	1.3%	20.5%	1.9%	83% (1929)	81% (1721)	82% (3650)
WARRINGTON PCT	13.6%	1.4%	13.8%	1.5%	9.8%	1.2%	15.9%	1.6%	97% (2209)	82% (1964)	89% (4173)
WARWICKSHIRE PCT	13.6%	1.0%	13.9%	1.0%	8.2%	0.8%	15.6%	1.0%	87% (4583)	79% (4712)	83% (9295)
WEST ESSEX PCT	13.1%	1.3%	13.7%	1.3%	9.3%	1.1%	17.3%	1.5%	92% (2576)	87% (2549)	89% (5125)
WEST HERTFORDSHIRE PCT	15.4%	1.0%	13.5%	1.0%	9.7%	0.8%	14.1%	1.0%	89% (5119)	84% (4889)	87% (10008)
WEST KENT PCT	12.7%	0.9%	14.5%	0.9%	9.1%	0.8%	16.1%	1.0%	74% (5179)	75% (5479)	75% (10658)
WEST SUSSEX PCT	12.7%	0.8%	13.9%	0.8%	8.9%	0.7%	14.6%	0.9%	82% (6588)	82% (6597)	82% (13185)
WESTERN CHESHIRE PCT	11.8%	1.5%	14.7%	2.0%	9.0%	1.3%	18.8%	2.2%	73% (1782)	46% (1205)	59% (2987)
WESTMINSTER PCT	11.4%	1.7%	15.5%	2.1%	10.4%	1.6%	22.0%	2.4%	94% (1374)	84% (1124)	89% (2498)
WILTSHIRE PCT	13.2%	1.0%	13.8%	1.2%	8.5%	0.9%	13.5%	1.2%	85% (4019)	68% (3351)	76% (7370)
WIRRAL PCT	14.1%	1.3%	15.1%	1.2%	9.1%	1.1%	19.7%	1.4%	85% (2847)	80% (3267)	82% (6114)
WOLVERHAMPTON CITY PCT	12.6%	1.4%	14.7%	1.3%	10.8%	1.3%	25.4%	1.7%	79% (2116)	91% (2669)	85% (4785)
WORCESTERSHIRE PCT	15.7%	1.1%	15.1%	1.0%	9.8%	0.9%	15.2%	1.0%	82% (4397)	76% (4583)	79% (8980)
Total	13.0%	0.1%	14.2%	0.1%	9.9%	0.1%	17.5%	0.1%	83% (435927)	78% (440489)	80% (876416)

Table B: SHA prevalence and participation rates for NCMP 2006/07

Strategic Health Authority	Overweight				Obese				Participation rate and number of children measured		
	Reception		Year 6		Reception		Year 6		Reception	Year 6	Total
	Prevalence	±	Prevalence	±	Prevalence	±	Prevalence	±			
East Midlands SHA	13.3%	0.3%	13.9%	0.4%	9.8%	0.3%	16.6%	0.4%	82% (36946)	74% (35133)	78% (72079)
East of England SHA	12.9%	0.3%	13.8%	0.3%	9.1%	0.3%	15.7%	0.3%	85% (49042)	80% (50578)	82% (99620)
London SHA	12.0%	0.2%	14.8%	0.3%	11.3%	0.2%	20.8%	0.3%	83% (65680)	81% (64591)	82% (130271)
North East SHA	14.4%	0.5%	14.9%	0.4%	10.9%	0.4%	19.9%	0.5%	87% (22863)	82% (24401)	84% (47264)
North West SHA	13.8%	0.3%	14.1%	0.3%	10.2%	0.2%	17.3%	0.3%	84% (62023)	72% (57880)	78% (119903)
South Central SHA	12.6%	0.4%	13.7%	0.4%	8.9%	0.3%	16.2%	0.4%	83% (32324)	83% (34788)	83% (67112)
South East Coast SHA	12.4%	0.4%	14.0%	0.4%	8.5%	0.3%	15.6%	0.4%	76% (32629)	76% (34105)	76% (66734)
South West SHA	13.5%	0.3%	13.9%	0.3%	9.0%	0.3%	14.9%	0.4%	83% (39973)	71% (38318)	76% (78291)
West Midlands SHA	13.3%	0.3%	14.3%	0.3%	10.4%	0.3%	19.1%	0.3%	82% (48026)	80% (51902)	81% (99928)
Yorkshire and the Humber SHA	12.9%	0.3%	14.1%	0.3%	9.7%	0.3%	17.2%	0.3%	88% (46421)	82% (48793)	85% (95214)
Total	13.0%	0.1%	14.2%	0.1%	9.9%	0.1%	17.5%	0.1%	83% (435927)	78% (440489)	80% (876416)

Table C: LA prevalence and participation rates for NCMP 2006/07

Local Authority	Overweight				Obese				Participation rate and number of children measured		
	Reception		Year 6		Reception		Year 6		Reception	Year 6	Total
	Prevalence	±	Prevalence	±	Prevalence	±	Prevalence	±			
Barking and Dagenham	13.7%	1.7%	16.3%	2.1%	14.4%	1.7%	20.8%	2.3%	68% (1637)	50% (1174)	59% (2811)
Barnet	11.5%	1.2%	14.6%	1.3%	9.2%	1.1%	17.4%	1.4%	92% (2906)	89% (2845)	90% (5751)
Barnsley	12.4%	1.4%	15.2%	1.4%	9.4%	1.3%	19.9%	1.6%	89% (2043)	88% (2437)	88% (4480)
Bath and North East Somerset	14.6%	1.8%	13.2%	1.8%	8.3%	1.4%	14.7%	1.9%	90% (1502)	80% (1365)	85% (2867)
Bedfordshire	12.8%	1.1%	12.9%	1.1%	9.3%	0.9%	15.1%	1.1%	85% (3776)	82% (3859)	84% (7635)
Bexley	12.1%	1.4%	15.1%	1.5%	9.5%	1.3%	19.4%	1.6%	79% (2012)	78% (2241)	79% (4253)
Birmingham	11.9%	0.6%	13.9%	0.7%	11.3%	0.6%	21.5%	0.8%	87% (11089)	78% (10142)	83% (21231)
Blackburn with Darwen	12.6%	1.6%	15.2%	1.7%	9.7%	1.4%	16.5%	1.8%	85% (1665)	83% (1683)	84% (3348)
Blackpool	13.6%	2.2%	12.3%	2.2%	9.9%	1.9%	16.2%	2.5%	64% (926)	50% (829)	56% (1755)
Bolton	13.2%	1.3%	13.9%	1.3%	10.7%	1.2%	17.9%	1.4%	85% (2751)	83% (2798)	84% (5549)
Bournemouth	14.0%	2.0%	13.1%	2.0%	10.7%	1.8%	16.0%	2.2%	89% (1189)	76% (1104)	82% (2293)
Bracknell Forest	11.0%	1.9%	16.5%	2.3%	8.0%	1.6%	14.3%	2.1%	97% (1079)	88% (1023)	92% (2102)
Bradford	12.6%	0.9%	13.6%	0.9%	10.7%	0.8%	19.5%	1.1%	83% (5477)	79% (5169)	81% (10646)
Brent	10.9%	1.2%	14.8%	1.4%	10.6%	1.2%	22.1%	1.6%	87% (2709)	77% (2520)	82% (5229)
Brighton and Hove	7.5%	1.1%	14.1%	1.6%	6.0%	1.0%	16.1%	1.7%	85% (2115)	73% (1710)	79% (3825)
Bristol, City of	12.2%	1.1%	13.0%	1.7%	9.7%	1.0%	15.2%	1.8%	88% (3278)	44% (1547)	66% (4825)
Bromley	11.9%	1.2%	12.5%	1.2%	8.4%	1.0%	15.5%	1.3%	92% (2907)	82% (2839)	87% (5746)
Buckinghamshire	9.6%	0.9%	13.2%	1.0%	6.6%	0.7%	14.0%	1.0%	83% (4349)	86% (4428)	85% (8777)
Bury	12.6%	1.5%	14.4%	1.7%	9.8%	1.4%	15.1%	1.7%	88% (1799)	77% (1611)	83% (3410)
Calderdale	11.0%	1.3%	13.9%	1.4%	7.8%	1.1%	14.0%	1.4%	88% (2122)	89% (2355)	88% (4477)
Cambridgeshire	11.4%	0.9%	13.4%	1.0%	8.2%	0.8%	15.8%	1.1%	73% (4322)	68% (4149)	70% (8471)
Camden	11.9%	1.8%	12.8%	1.9%	9.3%	1.6%	21.1%	2.3%	87% (1307)	87% (1211)	87% (2518)
Cheshire	12.8%	0.9%	14.8%	1.0%	8.7%	0.8%	17.1%	1.0%	77% (5288)	69% (5301)	73% (10589)
City of London	x	x	x	x	x	x	x	x	100% (22)	96% (23)	98% (45)
Cornwall and Isles of Scilly	14.5%	1.4%	14.2%	1.4%	8.2%	1.1%	16.7%	1.5%	46% (2278)	42% (2371)	44% (4649)
Coventry	14.6%	1.3%	13.7%	1.2%	11.3%	1.2%	19.4%	1.4%	83% (2789)	89% (3196)	86% (5985)
Croydon	12.5%	1.2%	13.7%	1.2%	12.0%	1.1%	19.9%	1.3%	83% (3078)	87% (3392)	85% (6470)
Cumbria	13.6%	1.0%	13.3%	1.2%	10.1%	0.9%	15.5%	1.3%	82% (4358)	51% (2847)	66% (7205)
Darlington	16.5%	2.2%	14.3%	2.0%	10.7%	1.9%	21.0%	2.3%	97% (1055)	96% (1159)	96% (2214)
Derby	16.3%	1.5%	14.5%	1.4%	13.2%	1.3%	19.3%	1.6%	88% (2435)	82% (2279)	85% (4714)
Derbyshire	14.2%	0.8%	13.6%	0.8%	8.5%	0.7%	15.6%	0.9%	89% (6565)	80% (6810)	84% (13375)
Devon	12.9%	0.9%	13.9%	0.9%	8.5%	0.8%	14.5%	0.9%	80% (5135)	82% (6359)	81% (11494)
Doncaster	12.7%	1.2%	14.2%	1.3%	8.8%	1.0%	18.0%	1.4%	83% (2831)	76% (2890)	79% (5721)
Dorset	13.5%	1.2%	13.8%	1.2%	8.7%	1.0%	13.1%	1.2%	87% (3109)	77% (3269)	82% (6378)
Dudley	13.9%	1.2%	15.1%	1.2%	11.4%	1.1%	23.4%	1.4%	97% (3330)	89% (3513)	92% (6843)
Durham	14.5%	1.0%	14.3%	1.0%	9.7%	0.9%	19.7%	1.2%	93% (4380)	84% (4560)	88% (8940)
Ealing	12.0%	1.2%	15.3%	1.3%	11.8%	1.2%	21.8%	1.5%	79% (2601)	89% (2896)	84% (5497)
East Riding of Yorkshire	13.2%	1.5%	14.0%	1.3%	9.2%	1.3%	15.5%	1.3%	63% (1916)	77% (2946)	71% (4862)
East Sussex	13.1%	1.0%	13.9%	1.0%	8.2%	0.8%	15.3%	1.1%	82% (4033)	78% (4243)	80% (8276)
Enfield	13.2%	1.2%	14.9%	1.3%	11.9%	1.1%	21.4%	1.5%	85% (3064)	82% (2970)	83% (6034)
Essex	12.2%	0.6%	13.9%	0.6%	8.2%	0.5%	15.4%	0.6%	80% (11060)	78% (12273)	79% (23333)
Gateshead	14.4%	1.6%	13.8%	1.5%	10.3%	1.4%	20.2%	1.7%	100% (1852)	99% (2074)	99% (3926)
Gloucestershire	14.3%	1.0%	14.2%	1.0%	10.0%	0.9%	15.6%	1.0%	82% (4618)	77% (4936)	79% (9554)
Greenwich	13.2%	1.9%	13.9%	1.6%	9.1%	1.6%	21.2%	1.9%	45% (1187)	69% (1821)	57% (3008)
Hackney	14.5%	1.5%	16.1%	1.6%	16.1%	1.6%	24.4%	1.9%	95% (2075)	94% (2015)	95% (4090)
Halton	12.5%	2.0%	14.1%	2.0%	11.6%	1.9%	22.4%	2.4%	79% (1053)	85% (1167)	82% (2220)
Hammersmith and Fulham	14.7%	2.3%	15.7%	2.4%	10.8%	2.0%	23.2%	2.8%	80% (905)	82% (904)	81% (1809)
Hampshire	13.9%	0.7%	13.6%	0.6%	8.9%	0.6%	15.9%	0.7%	77% (10140)	79% (11549)	78% (21689)
Haringey	12.5%	1.3%	14.5%	1.5%	12.9%	1.3%	23.8%	1.8%	88% (2551)	76% (2055)	82% (4606)
Harrow	10.5%	1.4%	16.6%	1.6%	9.1%	1.3%	17.0%	1.6%	84% (1902)	83% (2018)	84% (3920)
Hartlepool	9.5%	2.5%	15.3%	2.1%	9.5%	2.5%	24.2%	2.5%	52% (637)	84% (1097)	70% (1634)
Havering	14.4%	1.7%	17.0%	1.6%	11.2%	1.5%	20.3%	1.7%	70% (1663)	80% (2221)	75% (3884)
Herefordshire, County of	12.4%	1.8%	13.9%	1.8%	8.9%	1.5%	16.7%	1.9%	83% (1342)	75% (1470)	79% (2812)
Hertfordshire	14.0%	0.7%	13.6%	0.7%	9.2%	0.6%	14.2%	0.7%	87% (10092)	84% (10142)	85% (20234)
Hillingdon	11.1%	1.2%	14.1%	1.3%	8.5%	1.1%	19.5%	1.5%	90% (2666)	90% (2721)	90% (5387)
Hounslow	11.4%	1.3%	15.8%	1.5%	11.3%	1.3%	21.8%	1.7%	91% (2146)	94% (2182)	92% (4328)
Isle of Wight	16.2%	2.3%	15.4%	1.9%	13.7%	2.1%	18.7%	2.1%	92% (999)	87% (1338)	89% (2337)
Islington	12.8%	1.6%	14.1%	1.7%	10.1%	1.5%	23.9%	2.1%	84% (1588)	81% (1538)	83% (3126)
Kensington and Chelsea	11.2%	2.1%	17.2%	2.7%	9.6%	2.0%	21.5%	2.9%	95% (855)	88% (777)	92% (1632)
Kent	13.3%	0.7%	14.0%	0.6%	9.4%	0.6%	16.9%	0.7%	64% (9509)	71% (11384)	67% (20893)
Kingston upon Hull, City of	15.0%	1.5%	14.8%	1.6%	11.9%	1.3%	19.7%	1.7%	84% (2272)	68% (1989)	76% (4261)
Kingston upon Thames	9.6%	1.6%	14.7%	1.9%	7.7%	1.4%	15.4%	2.0%	92% (1310)	89% (1275)	91% (2585)
Kirklees	13.0%	1.0%	14.5%	1.1%	9.6%	0.9%	16.8%	1.1%	94% (4440)	86% (4229)	90% (8669)
Knowsley	16.9%	1.9%	16.0%	1.9%	13.1%	1.7%	18.1%	2.0%	88% (1487)	72% (1426)	79% (2913)
Lambeth	13.1%	1.5%	16.5%	1.7%	13.3%	1.5%	25.1%	2.0%	73% (1907)	72% (1732)	72% (3639)
Lancashire	14.5%	0.7%	13.1%	0.8%	9.9%	0.6%	13.4%	0.8%	78% (9450)	51% (6826)	64% (16276)
Leeds	11.7%	0.8%	14.4%	0.8%	9.2%	0.7%	17.8%	0.9%	92% (6831)	98% (7499)	95% (14430)
Leicester	11.0%	1.1%	13.6%	1.3%	10.6%	1.1%	19.6%	1.5%	81% (2966)	74% (2536)	78% (5502)
Leicestershire	13.0%	0.9%	14.5%	0.9%	9.0%	0.8%	14.7%	0.9%	85% (5535)	82% (6012)	83% (11547)
Lewisham	15.7%	2.0%	15.7%	2.1%	14.4%	1.9%	19.5%	2.3%	87% (1297)	98% (1106)	92% (2403)
Lincolnshire	13.2%	1.1%	13.6%	1.3%	9.2%	0.9%	17.4%	1.4%	58% (3766)	47% (2872)	53% (6638)
Liverpool	12.7%	1.0%	14.2%	1.1%	10.6%	0.9%	18.0%	1.2%	95% (4113)	79% (3856)	86% (7969)
Luton	13.0%	1.4%	13.3%	1.4%	11.3%	1.3%	21.1%	1.7%	78% (2129)	84% (2138)	81% (4267)
Manchester	12.7%	1.0%	14.7%	1.1%	11.5%	1.0%	22.8%	1.3%	84% (4135)	80% (3893)	82% (8028)
Medway	11.4%	1.3%	15.3%	1.4%	9.0%	1.2%	19.3%	1.5%	79% (2203)	88% (2719)	84% (4922)

Local Authority	Overweight					Obese					Participation rate and number of children measured		
	Reception		Year 6			Reception		Year 6			Reception	Year 6	Total
	Prevalence	±	Prevalence	±		Prevalence	±	Prevalence	±				
Merton	11.8%	1.6%	15.8%	1.8%		12.1%	1.6%	18.3%	1.9%		83% (1519)	86% (1516)	85% (3035)
Middlesbrough	13.4%	1.9%	17.3%	2.0%		11.3%	1.7%	20.6%	2.1%		60% (1279)	65% (1436)	63% (2715)
Milton Keynes	14.3%	1.4%	14.2%	1.5%		10.1%	1.2%	17.7%	1.6%		88% (2262)	81% (2184)	85% (4446)
Newcastle upon Tyne	13.6%	1.4%	14.5%	1.5%		10.9%	1.3%	21.3%	1.7%		87% (2251)	86% (2182)	86% (4433)
Newham	10.1%	1.0%	14.7%	1.2%		14.4%	1.2%	23.6%	1.4%		88% (3327)	90% (3459)	89% (6786)
Norfolk	12.1%	0.8%	14.3%	0.8%		8.3%	0.7%	16.2%	0.9%		88% (6595)	82% (7146)	85% (13741)
North East Lincolnshire	16.9%	1.9%	14.6%	1.7%		10.0%	1.5%	16.4%	1.8%		86% (1468)	79% (1589)	82% (3057)
North Lincolnshire	11.1%	1.6%	14.8%	1.8%		11.1%	1.6%	16.7%	1.9%		93% (1519)	77% (1506)	84% (3025)
North Somerset	14.4%	1.7%	12.7%	1.7%		8.9%	1.3%	13.8%	1.8%		83% (1714)	66% (1394)	74% (3108)
North Tyneside	15.9%	1.7%	15.0%	1.6%		10.1%	1.4%	17.5%	1.7%		90% (1776)	85% (1887)	87% (3663)
North Yorkshire	14.8%	1.0%	14.4%	0.9%		9.4%	0.8%	15.8%	1.0%		89% (5108)	86% (5313)	87% (10421)
Northamptonshire	13.0%	0.8%	14.0%	1.0%		9.2%	0.7%	14.6%	1.0%		88% (6712)	64% (5112)	75% (11824)
Northumberland	14.0%	1.3%	14.0%	1.3%		10.1%	1.1%	18.3%	1.4%		91% (2839)	82% (2847)	86% (5686)
Nottingham	12.7%	1.3%	13.9%	1.4%		12.5%	1.3%	20.1%	1.6%		85% (2423)	80% (2367)	83% (4790)
Nottinghamshire	13.4%	0.8%	13.6%	0.8%		9.8%	0.7%	17.2%	0.9%		84% (6509)	80% (7052)	82% (13561)
Oldham	11.5%	1.2%	13.7%	1.3%		9.4%	1.1%	16.2%	1.4%		88% (2607)	85% (2571)	87% (5178)
Oxfordshire	12.2%	0.9%	13.0%	0.9%		8.0%	0.7%	15.3%	1.0%		88% (5396)	84% (5157)	86% (10553)
Peterborough	17.2%	1.7%	15.5%	1.7%		11.9%	1.4%	15.9%	1.7%		94% (1981)	83% (1770)	88% (3751)
Plymouth	13.9%	1.5%	14.3%	1.5%		8.6%	1.2%	15.4%	1.5%		89% (2178)	82% (2222)	85% (4400)
Poole	13.2%	2.0%	13.4%	2.0%		10.2%	1.8%	15.5%	2.1%		87% (1100)	84% (1111)	85% (2211)
Portsmouth	15.4%	1.8%	14.9%	1.8%		12.3%	1.6%	24.0%	2.1%		86% (1615)	74% (1537)	80% (3152)
Reading	13.6%	2.5%	15.6%	2.0%		11.6%	2.3%	17.3%	2.1%		86% (748)	90% (1215)	79% (1963)
Redbridge	9.8%	1.1%	13.7%	1.3%		10.4%	1.1%	20.5%	1.5%		90% (2742)	85% (2717)	87% (5459)
Redcar and Cleveland	11.9%	1.9%	14.1%	1.9%		11.5%	1.8%	17.0%	2.0%		59% (1166)	64% (1355)	62% (2521)
Richmond upon Thames	11.4%	1.5%	12.2%	1.7%		6.4%	1.2%	13.1%	1.8%		92% (1714)	91% (1410)	91% (3124)
Rochdale	14.3%	1.4%	13.3%	1.4%		11.7%	1.3%	16.5%	1.5%		100% (2328)	100% (2308)	100% (4636)
Rotherham	13.5%	1.3%	15.0%	1.4%		10.3%	1.2%	18.4%	1.5%		88% (2563)	79% (2559)	83% (5122)
Rutland	15.7%	4.0%	18.1%	4.4%		9.0%	3.2%	19.1%	4.5%		84% (312)	79% (293)	81% (605)
Salford	14.5%	1.6%	14.9%	1.5%		11.7%	1.4%	21.1%	1.8%		83% (1971)	86% (2057)	85% (4028)
Sandwell	11.3%	1.2%	13.5%	1.3%		10.6%	1.2%	20.2%	1.5%		68% (2623)	72% (2751)	70% (5374)
Sefton	15.6%	1.5%	14.3%	1.3%		11.6%	1.3%	18.4%	1.4%		81% (2334)	85% (2794)	83% (5128)
Sheffield	9.7%	0.9%	12.5%	1.0%		6.9%	0.8%	14.8%	1.0%		84% (4248)	84% (4520)	84% (8768)
Shropshire	14.8%	1.5%	13.4%	1.3%		10.1%	1.2%	16.8%	1.5%		85% (2290)	80% (2474)	82% (4764)
Slough	12.8%	2.0%	13.1%	2.3%		10.1%	1.8%	21.3%	2.7%		96% (1033)	64% (862)	78% (1895)
Solihull	12.1%	1.5%	13.9%	1.6%		8.9%	1.3%	14.5%	1.6%		79% (1773)	70% (1895)	74% (3668)
Somerset	13.7%	1.0%	13.7%	1.0%		8.7%	0.8%	15.1%	1.0%		83% (4420)	78% (4558)	80% (8978)
South Gloucestershire	13.0%	1.3%	14.0%	1.7%		9.7%	1.2%	13.7%	1.7%		88% (2462)	53% (1661)	69% (4123)
South Tyneside	14.8%	1.9%	15.7%	1.8%		12.4%	1.7%	20.2%	2.0%		95% (1369)	90% (1607)	93% (2976)
Southampton	11.1%	1.5%	13.4%	1.6%		9.5%	1.4%	16.9%	1.8%		85% (1750)	81% (1700)	83% (3450)
Southend-on-Sea	13.8%	1.8%	14.5%	1.8%		10.8%	1.6%	17.6%	1.9%		83% (1439)	78% (1515)	80% (2954)
Southwark	14.0%	1.4%	13.9%	1.4%		13.2%	1.3%	27.0%	1.9%		83% (2491)	77% (2211)	80% (4702)
St. Helens	19.0%	2.3%	16.1%	1.7%		14.3%	2.1%	21.0%	1.8%		57% (1084)	87% (1872)	73% (2956)
Staffordshire	13.0%	0.9%	14.3%	0.8%		9.6%	0.8%	17.4%	0.8%		65% (5444)	82% (7972)	74% (13416)
Stockport	10.6%	1.2%	11.5%	1.3%		6.9%	1.0%	13.8%	1.4%		87% (2435)	72% (2185)	79% (4620)
Stockton-on-Tees	14.9%	1.6%	13.6%	1.8%		12.6%	1.5%	19.6%	2.0%		95% (1898)	67% (1468)	81% (3366)
Stoke-on-Trent	14.8%	1.6%	14.3%	1.5%		10.9%	1.4%	20.3%	1.8%		74% (1873)	73% (2020)	73% (3893)
Suffolk	13.7%	0.9%	13.7%	0.9%		9.8%	0.7%	16.0%	0.9%		91% (6098)	82% (6130)	86% (12228)
Sunderland	15.4%	1.4%	17.0%	1.4%		12.4%	1.3%	21.4%	1.5%		89% (2461)	84% (2729)	86% (5190)
Surrey	12.2%	0.7%	13.6%	0.8%		7.7%	0.6%	13.2%	0.8%		74% (8102)	69% (7452)	72% (15554)
Sutton	12.3%	1.5%	17.1%	1.8%		11.0%	1.5%	16.2%	1.7%		92% (1766)	84% (1718)	87% (3484)
Swindon	13.6%	1.5%	15.3%	1.6%		9.8%	1.3%	17.3%	1.7%		88% (1955)	82% (1955)	85% (3910)
Tameside	14.3%	1.6%	13.7%	1.7%		9.5%	1.3%	15.3%	1.8%		77% (1826)	60% (1604)	68% (3430)
Telford and Wrekin	17.0%	1.9%	16.0%	1.7%		12.5%	1.6%	19.0%	1.9%		85% (1557)	84% (1686)	85% (3243)
Thurrock	10.8%	1.5%	13.5%	1.8%		9.5%	1.5%	18.2%	2.0%		86% (1550)	78% (1456)	82% (3006)
Torbay	12.7%	2.0%	14.5%	2.1%		8.2%	1.7%	15.7%	2.1%		85% (1016)	80% (1115)	83% (2131)
Tower Hamlets	11.1%	1.3%	14.2%	1.4%		14.6%	1.4%	23.0%	1.7%		83% (2424)	83% (2370)	83% (4794)
Trafford	15.2%	1.5%	14.9%	1.5%		10.7%	1.3%	16.9%	1.6%		89% (2128)	86% (2161)	88% (4289)
Wakefield	16.7%	1.6%	13.7%	1.5%		16.0%	1.6%	17.9%	1.6%		77% (2035)	55% (2157)	64% (4192)
Walsall	12.3%	1.2%	14.7%	1.3%		10.3%	1.1%	19.4%	1.5%		92% (2843)	87% (2834)	89% (5677)
Waltham Forest	10.3%	1.3%	14.6%	1.6%		12.3%	1.4%	23.3%	1.9%		81% (2150)	76% (1853)	79% (4003)
Wandsworth	10.4%	1.4%	13.8%	1.6%		10.0%	1.3%	20.5%	1.9%		83% (1929)	81% (1721)	82% (3650)
Warrington	13.6%	1.4%	13.8%	1.5%		9.8%	1.2%	15.9%	1.6%		95% (2209)	82% (1964)	89% (4173)
Warwickshire	13.6%	1.0%	13.9%	1.0%		8.2%	0.8%	15.6%	1.0%		87% (4583)	79% (4712)	83% (9295)
West Berkshire	12.0%	1.9%	14.0%	1.9%		10.9%	1.9%	16.2%	2.0%		78% (1076)	89% (1336)	84% (2412)
West Sussex	12.7%	0.8%	13.9%	0.8%		8.9%	0.7%	14.6%	0.9%		82% (6588)	82% (6597)	82% (13185)
Westminster	11.4%	1.7%	15.5%	2.1%		10.4%	1.6%	22.0%	2.4%		94% (1374)	84% (1124)	89% (2498)
Wigan	15.4%	1.3%	13.8%	1.3%		10.3%	1.1%	16.9%	1.4%		92% (2952)	77% (2676)	84% (5628)
Wiltshire	13.2%	1.0%	13.8%	1.2%		8.5%	0.9%	13.5%	1.2%		85% (4019)	68% (3351)	76% (7370)
Windsor and Maidenhead	9.0%	1.7%	11.5%	1.9%		7.4%	1.5%	13.6%	2.1%		100% (1129)	91% (1060)	95% (2189)
Wirral	14.1%	1.3%	15.1%	1.2%		9.1%	1.1%	19.7%	1.4%		86% (2847)	85% (3267)	86% (6114)
Wokingham	8.4%	2.0%	13.9%	1.8%		6.1%	1.7%	12.7%	1.7%		68% (776)	89% (1399)	80% (2175)
Wolverhampton	12.6%	1.4%	14.8%	1.4%		10.9%	1.3%	25.5%	1.7%		76% (2093)	86% (2654)	81% (4747)
Worcestershire	15.7%	1.1%	15.1%	1.0%		9.8%	0.9%	15.2%	1.0%		80% (4397)	76% (4583)	78% (8980)
York	14.0%	1.8%	13.9%	1.7%		8.4%	1.4%	15.6%	1.8%		92% (1448)	91% (1635)	92% (3083)
Total	13.0%	0.1%	14.2%	0.1%		9.9%	0.1%	17.5%	0.1%		82% (435905)	78% (440466)	80% (876371)

Note: Prevalence data have been suppressed for City of London due to small numbers.

Annex 2

Confidence intervals

A confidence interval gives an indication of the likely error around an estimate which has been calculated from measurements based on a sample of the population. It indicates the range within which the true value for the population as a whole can be expected to lie, taking natural random variation into account.

We can be 95% sure that the true population value lies within the range defined by 95% confidence limits.

Larger sample sizes lead to narrower confidence intervals, since there is less natural random variation in the results when more individuals are measured. The NCMP has relatively narrow confidence limits because of the large size of the sample.

Note that:

- Confidence limits have not been adjusted using the finite population correction factor. Consequently, confidence intervals given in this report are likely to be slight *overestimates*;
- Confidence limits do not reflect error due to issues such as data quality and low response rates and, therefore, may give a misleading impression of the degree of precision.

Where applicable in this report, confidence limits are included in graphs. These confidence limits give an indication of whether any observed differences in prevalence (e.g. between school years) are likely to be real, or whether they are likely to be due to chance and the small numbers involved.

Where 95% confidence limits for two subgroups do not overlap, the difference can be said to be statistically significant.

Annex 3

Validation of entered data by the NCMP data-capture tool

Automated validation checks were done at two different stages:

- Record level:
 - Each submitted variable had to meet the required conditions (age range, etc);
 - Records that did not meet the conditions were flagged to PCTs on a separate pupil validation report sheet for the PCT to comment on or correct before uploading the data.
- PCT level:
 - checks on the overall dataset quality to feedback to the PCT. This feedback was provided to the PCT as a summary report sheet to highlight any areas of concern before upload.

Record-level checks

Records that did not meet the following criteria were flagged for comment (if the data was valid) or correction (if invalid):

1. Sex: Sex=M or Sex=F. Flag all records where Sex=blank.
2. Age: age in months is between 48 and 83 or 120 and 143 (both inclusive);
3. DCSF school code: pupil's school code included on the PCT's edited school list.
4. Date of measurement: date of measurement falls between 01-09-06 and 31-08-07.
5. Height, Weight and BMI: to be within the range of -3 to +4 standard deviations of the mean for age and sex according to the UK90 distributions. Records outside this range were defined as "extremes".

It was not possible for a PCT to upload records that had been flagged to the NCMP database without commenting first.

PCT-level checks

The PCT summary report sheet provided important information to enable the PCT to check the quality of the dataset before uploading:

1. Percentage of pupils with a BMI p-score:
 - ≥ 0.85 and < 0.95 (defined as "overweight")
 - ≥ 0.95 (defined as "obese")
2. Percentage of records not meeting the required variable specification for:
 - sex (blank);
 - age (outside required age range);
 - date of measurement (outside date range);
 - ethnicity (not coded correctly or blank).
3. Percentage of "duplicate" records;
4. Percentage of boys (flag up as warning if $>75\%$ or $<25\%$);
5. Percentage of pupils in Reception (flag up as warning if $>75\%$ or $<25\%$);
6. Percentage of records with "extreme" values for height, weight and BMI

Annex 4

Validation of uploaded data by the IC:

Before analysis, the following records were removed from the NCMP Database:

- any record with blank school Unique Reference Number, height, weight, sex or age;
- records with age outside the permitted age range (48 to 83 months and 120 to 143 months inclusive);
- extreme heights, weights and BMIs: any record further than 7 standard deviations from the mean was removed
- Independent/Private/SEN pupils have been flagged (records from the following institutions: 'Academies', 'Community Special', 'Foundation Special', 'Independent School Approved for SEN Pupils', 'Non-Maintained Special', 'Other Independent', 'Other Independent Special School', 'Pupil Referral Unit'). These records have been excluded from the prevalence and participation rate calculations but will remain in the database.

Annex 5

Calculating prevalence of “obese” and “overweight” children:

Prevalence = number of obese or overweight ÷ number of valid records uploaded

The tool calculates the number of obese/overweight children using the following steps for each record:

1. calculate the BMI score: $BMI = \frac{10,000}{h(cm)^2} \times w(kg)$
2. calculate the BMI z-score:
 - a. look up child age (in decimal months) and sex on the UK National BMI percentiles classification;
 - b. retrieve the corresponding L, M, and S values for use in the following formula (where y is the BMI score):

$$z = \frac{\left(\frac{y}{M}\right)^L - 1}{LS}$$

3. calculate BMI p-score:
 - o z-score converted to p-score using the standardised normal distribution
4. children with a BMI p-score ≥ 0.85 < 0.95 flagged as “overweight” and ≥ 0.95 flagged as “obese”.

Number of records uploaded:

- for every school uploaded, the database will look at the most recent upload for that school and count the number of records uploaded. The total for a PCT is the sum of these schools. Note: if a PCT has uploaded a school and then removes it later, this school will still be included in PCT's total number of records uploaded;

Annex 6

Calculating participation rates:

$$\text{Participation rate} = \frac{\text{Number of pupils measured}}{\text{Number of pupils eligible for measurement}}$$

where:

- The number of pupils measured is the total number of records uploaded by PCTs to the NCMP database after any invalid records have been removed (further information on the validation rules can be found in annex 3).

and

- Numbers of pupils eligible for measurement were based on either the total number of pupils from the school lists in the data capture tool, or revised data supplied by PCTs. A decision on which figure to use for each PCT was taken by the Information Centre based on comparisons with the data on pupils measured.

Annex 7

Analysis of the effect of participation rate on prevalence

Since the participation rate for NCMP 2006/07 was not 100%, the dataset used to estimate prevalence is a sample. The prevalence rates for the sample are assumed to apply to the entire population.

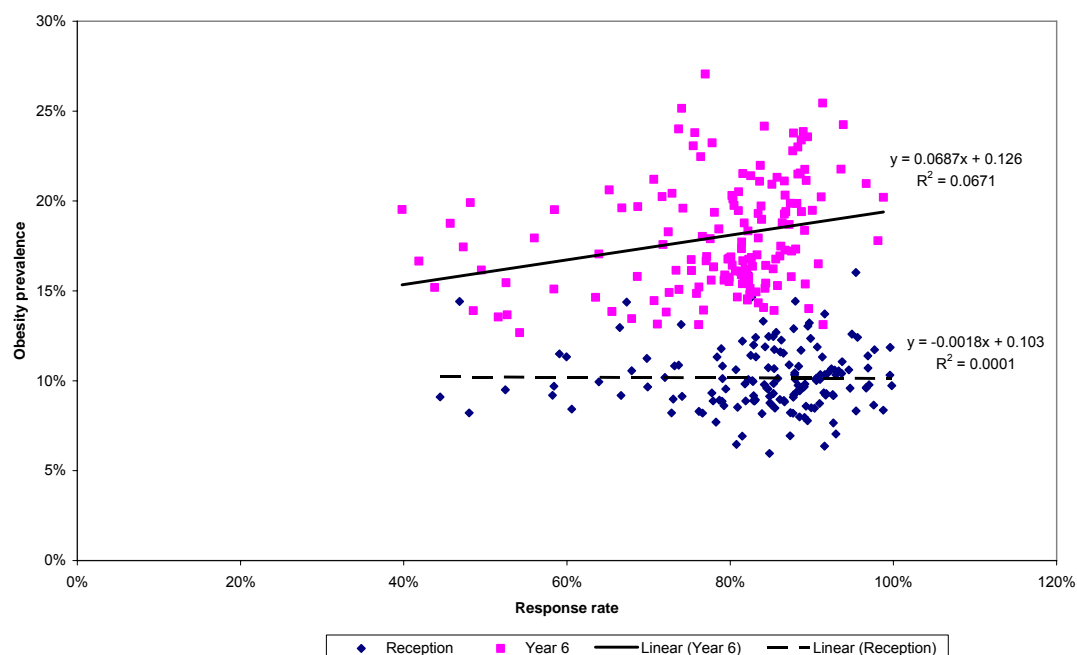
To avoid biased results, a sample must be representative of the entire population from which it was drawn. In the case of the NCMP this means that every child must have an equal chance of being included in the dataset.

Figure A investigates whether there is a relationship between participation rate and obesity prevalence by plotting each PCT's percentage participation rate against their prevalence.

This scatterplot is a useful graphical way of testing for a relationship between two variables by looking for:

- an overall pattern in the plotted points such as a straight or curved line;
- a direction or trend in the points: either positive (where high/low values of each variable tend to occur together) or negative (where a high value of one variable tends to occur with a low value of the other);
- proximity of the points to a simple form (e.g. a straight line or curved line): this indicates the strength in the relationship- the closer the points to the line, the stronger the relationship.

Figure A: Prevalence of obesity against participation rate, by PCT, England, 2006/07



The points in figure A are fairly widely scattered with no apparent pattern to indicate a relationship. The two lines on the graph are called “lines of best fit”. The line of best fit is a line plotted to fall closest to the largest number of points. The closer the points lie to this line, the stronger the relationship between the two variables. The wide dispersion of the points, around these lines, indicates that there is not a strong linear relationship between participation rate and prevalence in either year.

The strength of the relationship can be judged visually by simply looking at the proximity of the points to the line. However, the graph does not display the *relative* distances between points and this can be deceptive. A more accurate way of measuring the strength of a linear relationship between two variables is a numerical measure called the coefficient of determination (r^2). r^2 is the fraction of variation in one variable explained by the variation of the other. r^2 is always between 0 and 1, with 1 indicating a perfect linear relationship and 0 indicating no linear relationship.

In Reception Year, the r^2 value is 0.0001, i.e. very close to zero. This suggests that the “missing” data in Reception was not from a disproportionate number of “obese” children and, therefore, prevalence in this year has not been underestimated.

[In Year 6, the r^2 value is 0.0671. In other words, only 7% of the variation in the prevalence rate can be explained by the participation rate.

The direction of the relationship between participation rate and obesity prevalence in Year 6 is positive. This can be visually deduced by looking at the scattergraph and the line of best fit. There appears to be a weak trend of PCTs with low participation rates having low obesity prevalence. This suggests that a slightly disproportionate number of “obese” children in Year 6 could have missed measurement and, therefore, prevalence in Year 6 may be a slight underestimate. However, there may be other confounding factors which have a greater impact on the prevalence figures, and these are not investigated in this report.

In conclusion, participation rate is shown to have a slight but significant positive association with the estimated prevalence of overweight and obese Year 6 children in the 2006/07 NCMP data. For Reception there is no significant association between participation rate and prevalence.

- A detailed breakdown of prevalence and participation rates can be seen above in tables A-C which show prevalence (with associated 95% margins of error) and participation rates for SHAs, PCTs and LAs respectively

Annex 8

End Notes

¹ Prevalence rates have been calculated using the age and sex-specific UK National Body Mass Index (BMI) percentiles classification. This classification uses UK growth data from 1990 when a large representative sample of 37,700 children was constructed by combining data from 17 separate surveys. These data were then used to express BMI as a percentile based on the BMI distribution, adjusted for skewness (using Cole's LMS method - *Growth monitoring with the British 1990 growth reference*. Cole *Arch Dis Child*.1997; 76: 47-49), and age and sex.

- “overweight” is defined as greater than or equal to the 85th percentile but less than the 95th percentile;
- “obese” is defined as greater than the 95th percentile;

Note that “overweight” means “overweight but not obese”.

² See The National Child Measurement Programme *Guidance for PCTs: 2007–08 school year* (www.dh.gov.uk/healthyliving) for further information on which children were eligible for inclusion

³ Statistically significant at the 99% level according to a chi-squared significance test

⁴ See www.dh.gov.uk/healthyliving for more information about the National Child Measurement Programme, including guidance and useful resources for undertaking the exercise

⁵ The National Child Obesity Database (NCOD) in 2005/06

⁶ Body-mass index (BMI) is an indicator of body fat based on height and weight. $BMI = \text{weight}(\text{kg}) / \text{height}(\text{m})^2$

⁷ <http://www.nice.org.uk/CG43>

⁸ The following institutions were excluded from the prevalence and participation rate calculations: ‘ Private’, ‘Academy’, ‘Community Special’, ‘Foundation Special’, ‘Independent School Approved for SEN Pupils’, ‘Non-Maintained Special’, ‘Other Independent’, ‘Other Independent Special School’, ‘Pupil Referral Unit’. PCTs were encouraged, but not obliged, to include independent schools and special schools in their NCMP measurements. Numbers of independent school pupils were not, however, included in participation rates used for performance management purposes. This is because PCTs do not tend to routinely work with these schools.

⁹ The coefficient of variation (cv) is a measure of dispersion and is defined by the ratio of the standard deviation to the mean (standard deviation is a statistical term describing the measure of spread about the mean for a data set. It is calculated by taking the square root of the average of the deviations squared (note: deviation is the distance between a data point and the mean)).

¹⁰ The coefficient of determination reflects the relationship or linkage between two variables. Specifically, it is a measure of how much of the variation in Variable A can be explained by changes in Variable B. The coefficient of determination is always between 0 and 1, with 1 indicating a perfect relationship and 0 indicating no relationship. Relationships can be linear or non-linear. The above analysis looks at the linear relationship between obesity prevalence in each year.

¹¹ $R^2 = 0.05$.

¹² $R^2 = 0.85$.

¹³ The standard deviation of obesity prevalence is 0.9 percentage points in Reception and 2.0 percentage points in Year 6. However, when looking at the standard deviation relative to the mean, there is a less pronounced difference between the years.

¹⁴ Where 95% confidence intervals for prevalence estimates clearly do not overlap, it can be deduced that differences are statistically significant

¹⁵ The Index of Multiple Deprivation (IMD) is produced by the Department for Communities and Local Government (DCLG) and provides a numerical measure of deprivation based on deprivation in seven domains: income, employment, health and disability, education, skills and training, barriers to housing and services, crime and living environment. The higher the IMD score, the more deprived an area is defined to be.

Further details are available at: <http://www.neighbourhood.gov.uk/page.asp?id=1057>

¹⁶ Free school meal data and mapping to LA provided by Department for Children, Schools and Families (DCFS).

¹⁷ The 17 NHS ethnic codes map directly to the 17 NCMP ethnic categories. The 20 DfES ethnic codes have been mapped to the 17 NCMP categories by assigning the 3 extra categories as follows:

- Traveller of Irish Heritage has been assigned to White Irish;
- Gypsy/Roma has been assigned to Any Other White Background;
- Refused has been assigned to Not Stated.

¹⁸ The Office for National Statistics (ONS) produced the Rural and Urban Classification in consultation with the Department for Environment, Food and Rural Affairs, the Department for Communities and Local Government and the Countryside Agency. Areas are defined through two measures:

- settlement form: dispersed dwellings, hamlet, village, small town, urban fringe and urban (>10,000 population);
- sparsity - each hectare grid square is assigned a sparsity score based on the number of households in surrounding hectare squares up to a distance of 30 km.

The analyses in this report have combined “sparse” with “less sparse” and classifications are purely based on settlement form.

Further details are available at: <http://www.statistics.gov.uk/geography/nrudp.asp>

¹⁹ Source: Health Survey for England 2006, Joint Surveys Unit.

<http://www.ic.nhs.uk/pubs/hse06cvdandriskfactors>